

Infant Feeding Practices in the Prevention of Mother to Child Transmission in Onandjokwe District Hospital, Namibia

Otilie Tangeni Omuwa Ikeakanam

Research assignment presented in partial fulfilment of the requirements
for the degree Master of Nursing Science in the Faculty of Health Sciences
at the Stellenbosch University



Supervisor: Mrs Talitha Crowley

Department of Interdisciplinary Health Sciences
Nursing

December 2011

DECLARATION

By submitting this research assignment electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

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ABSTRACT

The impact of infant feeding practices in the prevention of mother-to-child-transmission of HIV raised concerns in the field of health services. Breast feeding adds an additional 15-30% risk of HIV transmission to the infant; therefore, mothers who are HIV-positive are in need of information regarding safe infant feeding.

A descriptive design for this particular study was applied with a primary quantitative approach. A convenient sample of sixty (n=60) participants between the ages of 15 – 37 were taken from subjects that enrolled in the prevention of mother-to-child transmission (PMTCT) programme in Onandjokwe district. The sample formed 85% of the target population (N=71). A structured questionnaire with closed and open-ended questions was used and completed by the researcher. Ethical approval for the study was obtained from the Ethics Committee at the Faculty of Health Sciences, University of Stellenbosch. Permission to conduct the research was obtained from the Ministry of Health and Social Services, Namibia, and the Onandjokwe district Hospital.

A pilot study was conducted that constituted 25% of the sample. Validity and reliability was insured by the pilot study and the consultation of an expert in HIV research and an expert in nursing research. The presentation of results was mostly descriptive in nature by using frequency tables and a pie chart.

The results showed that all participants (n=60/100%) were offered HIV counselling and testing during antenatal care. Mothers who were HIV positive knew that there is a possibility that the baby might be infected through breast milk. Furthermore, the study found that 70% (n=42) of participants used breast feeding exclusively, 20% (n=12) used replacement feeding and 10% (n=6) used mixed feeding practices.

It was concluded that pregnant women and mothers known to be HIV-infected should be informed of the infant feeding practice recommended by the national or sub-national authority to improve HIV-free survival of HIV-exposed infants. This includes information about the risks and benefits of various infant feeding options based on

local assessments and guidance in selecting the most suitable option for their own situation.

OPSOMMING

Die invloed van voedingspraktyke vir babas by die voorkoming van moeder-na-kind-oordrag van die menslike immuungebreekvirus (MIV) het kommer op die gebied van gesondheidsdienste laat ontstaan. Borsvoeding dra 'n addisionele 15–30% risiko van MIV-oordrag tot die baba by en daarom benodig moeders wat MIV-positief is inligting ten opsigte van veilige voeding van hulle babas.

'n Beskrywende ontwerp vir hierdie besondere studie is gebruik tesame met 'n primêr kwantitatiewe benadering. 'n Gerieflikheidsteekproef van sestig ($n=60$) deelnemers tussen die ouderdomme 15–37 jaar is gekies uit persone wat ingeskryf het vir die voorkoming van moeder-na-kind-oordrag (VMNKO) program in Onandjokwe-distrik. Die steekproef het 85% van die teikenpopulasie ($N=71$) uitgemaak. 'n Gestruktureerde vraelys met geslote en oop vrae is gebruik en deur die navorser voltooi. Etiese goedkeuring vir die studie is verkry van die Etiese Komitee van die Fakulteit Gesondheidswetenskappe, Universiteit Stellenbosch. Toestemming om die navorsing te doen, is verkry van die Ministerie van Gesondheid en Maatskaplike Dienste, Namibië, en die Onandjokwe Distrikshospitaal. 'n Loodsstudie is onderneem wat 25% van die steekproef behels het. Geldigheid en betroubaarheid is verseker deur die loodsstudie en oorlegpleging met 'n kundige op die gebied van MIV-navorsing en 'n kundige in verpleegnavorsing. Die aanbieding van resultate was meestal deskriptief van aard deur van frekwensietabelle en 'n sektordiagram gebruik te maak.

Die resultate het getoon dat MIV-berading en -toetsing gedurende voorgeboortesorg aan alle deelnemers ($n=60/100\%$) aangebied is. Moeders wat MIV-positief is, het geweet dat daar 'n moontlikheid bestaan dat die baba moontlik deur moedersmelk geïnfekteer kan word. Verder het die studie bevind dat 70% ($n=42$) van deelnemers uitsluitlik borsvoeding gebruik, 20% ($n=12$) gebruik 'n vervanging vir moedersmelk en 10% ($n=6$) gebruik gemengde voedingspraktyke.

Daar is tot die slotsom gekom dat swanger vroue en moeders van wie bekend is dat hulle MIV-geïnfekteer is, ingelig behoort te word oor die babavoedingspraktyk aanbeveel deur die nasionale of subnasionale owerheid vir die verbetering van MIV-vrye oorlewings van babas wat aan die MIV blootgestel is. Dit sluit in inligting oor die

risiko's en voordele van verskeie babavoedingsopsies gebaseer op plaaslike assesserings en leiding ten opsigte van die kies van die geskikste opsie vir hulle eie situasie.

DEDICATION

I warmly dedicate this thesis to my wonderful, daring husband and soul mate Uche Patrick and to our adorable children Ndapewa Onyebuchukwu, Ngozi Peneyambeko and Ugochukwu Peyohamba. Let this be a source of inspiration.

ACKNOWLEDGEMENTS

I am very grateful to Almighty GOD who by HIS grace provided me with strength and health to carry out this study. I would also like to express my sincere thanks to the following people:

- My appreciation and sincere gratitude to the University of Stellenbosch for giving me the opportunity to do this course and all my lecturers for their understanding and help.
- Mrs. Talitha Crowley my supervisor was instrumental in the shaping of this study. She tolerated my frequent disturbance without complain and continually offered useful advice. Your advice has not been in vain and this study would not have been completed without your assistance. I am very grateful and appreciate your help.
- Ministry of Health and Social Services for granting me the permission to carry out the study.
- Medical superintendent of Onandjokwe Lutheran Hospital Prof. F. Amaambo for granting me permission to conduct the study at the hospital.
- The cooperation and assistance I received from antenatal clinic staff and maternity ward are greatly appreciated.
- Most of all, sincere gratitude goes to all the women who shared these intimate details of their lives with me.
- A special acknowledgement is made to my beloved husband, Uche Patrick. Who has been and always will be the wind beneath my wings. There is no doubt in my mind that since you have come into my life that I like the eagle in the sky can soar high. With you on and by my side, everything is possible.
- To our children Ndapewa, Ngozi and Ugo thank you for your patience throughout the course.
- Special thanks to my mom and my sisters, my brothers, all my relatives, all my friends and colleagues for their much appreciated support
- Mr. Nhlanhla Lupahla thank you for statistical support on sampling and data analysis.
- Ms. Liz Vorster thank you for editing and layout of the study.

MAY GOD BLESS ALL OF YOU WHO HAVE CONTRIBUTED TO THIS STUDY

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ACRONYMS

| | |
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| AIDS | Acquired immunodeficiency syndrome |
| ANC | Antenatal care |
| ARV | Antiretroviral |
| AZT | Zidovudine |
| HAART | Highly Active Anti-retroviral Therapy |
| HIV | Human Immune Deficiency Virus |
| MOHSS | Ministry of Health and Social Services |
| MTCT | Mother to Child Transmission |
| NVP | Nevirapine |
| PMTCT | Prevention of Mother to Child Transmission |
| PNC | Postnatal Care |
| STIs | Sexually Transmitted Infections |
| UNAIDS | Joint United Nations Programme on AIDS |
| UNFPA | United Nations Population Fund |
| UNICEF | United Nations Children's Emergency Fund |
| VCT | Voluntarily Counseling and Testing |
| WHO | World Health Organization |

CHAPTER 1: ORIENTATION TO THE STUDY

1.1 INTRODUCTION

The impact of infant feeding practices in the prevention of mother-to-child transmission of HIV raised concerns in the field of health services. Breast feeding adds an additional 15-30% risk of HIV transmission to the infant and therefore mothers who are HIV positive are in need of information regarding safe infant feeding.

The problem of HIV transmission to the infant is due to the high rate of HIV infection in women of reproductive age, a large total population of women of reproductive age, a high birth rate and prolonged breast feeding. The best approach to prevent HIV infection in infants and young children, including transmission through breast milk, is to prevent HIV infection in young girls and women of child-bearing age (HIV and Infant Feeding, 2009:23). In particular, evidence has been reported that antiretroviral (ARV) interventions to either the HIV-infected mother or HIV-exposed infant can significantly reduce the risk of postnatal transmission of HIV through breast feeding (WHO, 2010:2).

In developed countries, mother-to-child transmission rates have fallen to as low as two percent of births among HIV infected mothers in recent years. This has been achieved with the introduction of HIV counseling and testing, zidovudine prophylaxis, elective caesarean delivery and the use of infant formula instead of breast feeding. In developing countries however, these interventions have generally not been available and prolonged breast feeding is the norm (WHO, UNAIDS, UNICEF and UNFPA, 2007:23).

The above-mentioned statements supported by practical experience of the researcher, indicated that it is important for health services to focus on the promotion of the prevention of mother-to-child transmission of HIV because:

- HIV is present in breast milk, although the viral concentrations in breast milk are significantly lower than those in blood.
- The risks of mother-to-child transmission through breast milk depend on a number of factors including the pattern of breast feeding. Babies who are

exclusively breast-fed in the first months of life may have a lower risk of becoming infected.

- Breast health (mastitis, cracked and bloody nipples and breast inflammation) are associated with higher risk of transmission.
- Breast feeding duration and the risk of mother-to-child transmission is believed to double if the mother becomes infected with the virus while breast feeding.
- Discussions on feeding choices must consider personal, family and cultural concerns as well as current research findings.
- A woman's choice should be based on accurate, complete information and the best option for her (HIV and Infant Feeding, 2009:22).

In this chapter the study, the rationale, problem statement and objectives are presented. The methodology, research design and approach will be discussed, as well as the population and sampling, data collection technique and data analysis. Finally, the operational definitions, conceptual framework, ethical considerations and a summary of the different chapters are presented.

1.2 STUDY RATIONALE

According to the UNAIDS Global Report, the HIV infection rate among children born to mothers living with HIV in 2009 was 370 000 (UNAIDS, 2010:78). Even though this showed a reduction compared to the 500 000 in 2001, the rate is still quite high. An alarming number of infants in Africa have already contracted HIV/AIDS from their HIV-infected mothers through mother-to-child transmission (MTCT). At least half a million infants and children have already died from AIDS, undermining child survival gains made in earlier years through comprehensive child health programmes. MTCT can occur during pregnancy, during labour and delivery, and after birth through breast feeding.

Namibia is a vast country covering 824,000 square kilometers. It has a population estimated at 1.8 million with a population growth rate of 2.6% per annum (Gaomab, Keulder & Sherbourne, 2003:1). According to the attendance records in Katima Mulilo Hospital, the HIV prevalence estimation is 19.6% amongst adults. Nationally the prevalence of HIV is surpassing 42% among attendees (in the Caprivi Strip

flanked by Angola, Botswana and Zambia) and ranging from 22% to 28% in the port cities of Luderitz, Swakopmund and Walvis Bay (MOHSS, 2004a:5).

In 2004, the national HIV prevalence ratio amongst pregnant women was 19.8%, ranging from 9% in Opuwo District Hospital to 43% in Katima Mulilo District Hospital across the 24 sentinel sites (MOHSS, 2004b:8). The HIV prevalence rate among pregnant women in Namibia has risen to almost 20%, with Katima Mulilo District Hospital registering a staggering 39.4%. Results of the 2006 National Sentinel Survey among pregnant women showed that the northern regions of the country were the worst affected by HIV.

According to Namibia's sentinel survey amongst pregnant women during 2006, Onandjokwe District Hospital is one of the worst affected districts with a HIV prevalence of 23.7%. The immediate neighbouring district has an even higher prevalence, for instance, Oshakati Intermediate Hospital with a prevalence of 27%, Engela District Hospital 23.7%. Opuwo and Gobabis District Hospitals recorded the lowest HIV prevalence of 7.9% (MOHSS, 2006:11).

The researcher noted an increase in the number of pregnant women infected with HIV during pregnancies and agrees with the Honorable Minister of Health and Social Services in Namibia, Doctor Libertine Amathila who noted that "it is clear that HIV and AIDS pose the greatest threat to individual and family survival that we have ever known. All Namibians have encountered the HIV and AIDS epidemic in one way or another. Tragically our precious children have not been spared from this horrible epidemic" (MOHSS, 2004:14).

Being a community health worker responsible for assessing and treating children who are under five years old in the district hospital, the researcher has noted the increased occurrence of children under five years being infected with HIV. The researcher's clients are mothers who brought their children for treatment. A few of the mothers had asked about effective ways to feed their infants and for how long they were going to breast-feed their infants. It was a matter of interest that these concerns usually came from the mothers who are HIV-positive.

Approximately 30% of children born to mothers who are HIV-positive will become infected with HIV if action is not taken soon (Tijou, Querre, Brou, Leroy, Desclaux

and the DITRAME study group, 2009:1-2). Mothers known to be HIV infected and whose infants are HIV uninfected or of unknown HIV status should breast-feed their infants exclusively for the first six months of life, introduce appropriate complementary food at 6 months thereafter and continue breast feeding for the first twelve months of life, using ARVs (Anti-retroviral therapy) up to four weeks after all breast feeding has stopped. However, the infants of those mothers on ARVs for their own health only take ARVs (nevirapine) for six weeks. Breast feeding should then only stop once a nutritionally adequate and safe diet without breast milk can be provided (WHO, 2010:6).

It thus appears that infant feeding is one of the more successful methods to decrease the number of infants becoming HIV-positive. Health education and counselling on infant feeding for mothers who are HIV-positive should provide the necessary information regarding feeding options so that mothers can make the best choice for themselves, their babies as well as their families.

With increasing HIV prevalence among pregnant women, the Namibian Government has taken serious measures to prevent mother-to-child transmission. One of these measures is the option of adjusting the guidance on infant feeding in order to minimise post-partum breast feeding transmission. HIV passes via breast feeding to about 1 out of 7 infants born to a mother who is HIV-positive. However, the HI-virus can be passed to the baby during pregnancy, during delivery and during breast feeding. Approximately 90% of HIV infection among children is acquired through breast feeding (HIV and breastfeeding, 2009:24).

Delivering a baby by caesarean section can reduce or prevent the amount of mother's blood that the baby is exposed to during birth. The other ways of prevention of mother-to-child transmission (MTCT) are to avoid performing episiotomies, the use of metal cups for vacuum deliveries, forceps deliveries and prevention of prolonged rupture of membranes (> 4 hours) during labour, as they increase the risk of transmission by exposing the neonate to maternal blood and other bodily fluid (Limpongsanurak, 2006:35).

According to the WHO recommendations, mothers who are HIV-positive should breast-feed exclusively from birth until six months with daily ARVs (nevirapine) until

4 weeks after all exposure to breast milk has ended or use replacement feeding with daily nevirapine until 6 weeks of age. These measures can also reduce the chance of passing the HI-virus from the mother to the child through breast feeding (WHO, 2010:6).

At the time of study, Onandjokwe district was giving nevirapine to the mothers during active labour, delivered babies by caesarean section if indicated, avoided performing episiotomies, avoided the use of metal cups for vacuums and forceps deliveries and prevented prolonged rupture of membranes (> 4 hours). The infants were given a once-off dose of nevirapine within 72 hours of delivery and exclusive breast feeding for 4 months or exclusive replacement feeding were advocated.

The main focus remains on the prevention of HIV transmission through breast feeding. Therefore, health education and counselling on infant feeding for mothers who are HIV-positive should provide the necessary information regarding feeding options so that they can make the best choice for themselves, their babies and their families (WHO, UNAIDS, UNICEF and UNFPA, 2007:25).

1.2.1 Guidance on infant feeding to minimise post-partum transmission of HIV

1.2.1.1 Option 1: Exclusive breast feeding

Exclusive breast feeding means to breast-feed infants for the first 6 months of life, to introduce appropriate complementary food thereafter, and to continue breast feeding for the first 12 months of life. Breast feeding should then only stop once a nutritionally adequate and safe diet without breast milk can be provided (WHO, 2010:31).

1.2.1.2 Option 2: Replacement feeding

Replacement feeding is the process of feeding a child who is not receiving any breast milk with a diet that provides all the nutrients the child needs until the child is fully fed on family food. Replacement feeding is the only 100% effective way to prevent mother-to-child transmission of HIV after birth. Replacement feeding is only recommended if it is acceptable, feasible, affordable, sustainable and safe (AFASS) (WHO, 2010:7).

Replacement feeding adds no additional risk of HIV transmission to the baby, but it can be a challenge to meet the AFASS criteria. Many local diets used for complementing infants are poor in energy, minerals and vitamins and predispose infants to diarrhoea and malnutrition. Replacement feeding is more difficult to implement, therefore mothers should be taught the dangers of replacement feeding, how to prepare infant formula and how to correctly and safely modify cow's or goat's milk.

A study done in Botswana among HIV infected women who chose replacement feeding revealed that diarrhoea (including prolonged diarrhoea over 7 days), difficulty in breathing and pneumonia were more common in the first 6 months. Many children on replacement feeding had been given medication in their first 2 weeks life (Farley & Kesho Bora Study Group, 2006:11).

Formula feeding was associated with a higher risk of infant mortality than breast feeding in rural population groups. A study done in Rakai, Uganda suggest that formula feeding should be discouraged in rural settings (Kagaayi, Gray, Brahmbhatt, Kigozi, Nalugoda, Wambwire-Mangen, Serwadda, Sewankambo, Ddungu, Ssebagala, Sekasanvu, Kigozi, Makumbi, Kiwanaku Lutalo, Reynolds & Wawer, 2008:5).

1.3 PROBLEM STATEMENT

It is not clear whether mothers who are HIV-positive in Onandjokwe District Hospital have adequate knowledge and information regarding safe infant feeding. The mothers who are HIV-positive experience problems in choosing the best feeding method for their babies due to cultural factors, financial constraints, stigmatisation and inadequate health care infrastructure.

In some regions of Namibia, mothers who are HIV-positive experience problems with their partners and family members, while other people in the community tend to turn their backs on such mothers and their babies. Being rejected by important people in one's life can be very painful and traumatic.

It has been emphasised by the World Health Organization that the correct choice of infant feeding is one of the methods in which transmission of HIV from mother to child can be successfully prevented. Success in this regard depends on various factors

such as knowledge and practices of mothers who are HIV-positive regarding infant feeding, availability of replacement feeding and policies of a country (UNICEF, 2000:3).

In general it is quite rare in sub-Saharan Africa that all three necessary requirements for replacement feeding can be adhered to in a sustainable manner i.e.

- an uninterrupted accessible supply of formula feeds for at least 6 months should be available to all mothers who are HIV-positive;
- access to safe drinking water; and
- adequate ways to boil water for the use in formula preparation and the sterilisation of utensils (UNAIDS, UNICEF and WHO, 2003:19).

The researcher decided to focus on infant feeding practices because improving infant feeding practices can reduce child mortality. It has been reported that antiretroviral (ARV) interventions to either the HIV-infected mother or HIV-exposed infant can significantly reduce the risk of postnatal transmission of HIV through breast feeding (WHO, 2010:1). It is therefore necessary to investigate the infant feeding practices and knowledge of HIV/AIDS of mothers who are enrolled in PMTCT programmes.

1.4 RESEARCH QUESTION

What are the infant feeding practices of mothers in the Prevention of Mother-To-Child Transmission of HIV (PMTCT) Programme in the Onandjokwe District Hospital, Namibia?

1.5 GOAL

The goal of the study is to investigate the infant feeding practices of mothers in the PMTCT Programme in the Onandjokwe District Hospital, Namibia.

1.6 OBJECTIVES

The research objectives are to determine the:

- Knowledge and practices of mothers who are HIV-positive with regard to infant feeding.
- Knowledge of mothers who are HIV-positive regarding HIV/AIDS and the Prevention of Mother-to-Child Transmission (PMTCT) programme.

1.7 METHODOLOGY

According to Polit and Hungler (1999:209), methodology can be described as procedures for obtaining, organising and analysing data; while Babbie and Mouton (2003:75) add that research methodology is the process and procedures to be used in a study, which is conducted in a systematic and logical way.

1.7.1 The research approach

For this research study a quantitative approach was used. Quantitative research is a formal, objective and systematic process in which numerical data are used to obtain information about the world (Burns & Grove, 2001:16). This approach will help to assess how the mothers who are HIV-positive feed their babies.

1.7.2 The research design

The descriptive design was used for this particular study. The goal of a descriptive design is to provide an abstract picture of a particular situation as it occurs naturally (Burns & Grove, 2001:248). The descriptive design is therefore suited for this study and attempts to present a picture of infant feeding practices in the prevention of mother-to-child-transmission. This research design is appropriate for a quantitative approach to understand the underpinnings of specific natural phenomena and to explain systematic relationships among phenomena (Polit & Hungler, 1999:36). Every project requires a research design that is carefully tailored to the exact needs of the researcher as well as to the problem being studied.

1.7.3 Sampling

A convenient sample of sixty ($n=60$) participants between the ages of 15 – 37 were taken from subjects that enrolled in the PMTCT programme in Onandjokwe district. The sample formed 85% of the target population ($N=71$).

The inclusion criteria for selection of the sample were:

- mothers who were HIV-positive; and
- mothers who have enrolled for the PMTCT Programme at the Onandjokwe district Hospital.

The exclusion criteria for selection of the sample were:

- mothers who have enrolled for a PMTCT programme at other districts; and
- mothers who are HIV-positive and have lost their babies.

1.7.4 Data instrument

An instrument is the device or technique that a researcher uses to collect data (questionnaires, observations, interviews, scales and tests) (Polit, Beck & Hungler, 2001:342). For this study, questionnaires were used for data collection. Specifically, a structured questionnaire with closed and open-ended questions (Annexure F) was used to guide the researcher. The questionnaire was designed after an in-depth literature study and guidance from experts in the field of HIV/AIDS and nursing. It was designed according to the objectives of the study. The questionnaire consists of three sections. Section A: Personal details and demographic data, Section B: knowledge on HIV/AIDS and the PMTCT Programme and Section C: Infant feeding practices.

1.7.5 Data collection

The study was conducted for a consecutive period of four months from 1 August to 31 November 2006. The data was collected with the use of structured questionnaires that consisted of a combination of closed and open-ended questions (Annexure F). The researcher completed the questionnaires.

1.7.6 Data analysis

Data analysis is the systematic organisation and synthesis of the research data (Polit & Hungler, 2001:460). It is conducted to reduce, organise and give meaning to the data.

Data analysis was done with the help of a computer programme, MS Excel. The presentation of results was mostly descriptive in nature by using frequency tables and a pie chart.

1.8 OPERATIONAL DEFINITIONS

For the purpose of this study particular terminology was defined as follows:

Acceptable feeding method

An acceptable feeding method implies that the mother perceives no significant barrier to choose a feeding option for cultural or social reasons or for fear of stigma and discrimination (WHO, 2009:29).

Affordable feeding method

An affordable feeding method means that the mother and family, with available community and/or health system support, can pay for the cost of replacement feeds - including all ingredients, fuel and clean water without compromising the family's health and nutrition budget (WHO, 2009:29).

Feasible feeding method

A feasible feeding method is when the mother (or other family member) has adequate time, knowledge, skills and other resources to prepare feeds and to feed the infant, as well as the support to cope with family, community and social pressures in preventing mother to child transmission (WHO, 2009:29).

Safe feeding method

A safe feeding method is when replacement foods are correctly and hygienically prepared and stored, and fed in nutritionally adequate quantities, with clean hands and using clean utensils, preferably by cup (WHO, 2009:29).

Sustainable feeding method

A sustainable feeding method is when the mother has access to a continuous and uninterrupted supply of all ingredients and commodities needed to implement the feeding option safely for as long as the infant needs it (WHO, 2009:29).

Health workers

All people engaged in the promotion, protection or improvement of the health population (WHO; 2006:19).

1.9 CONCEPTUAL FRAMEWORK

A conceptual framework is an abstract, logical structure of the meaning that guides the development of the study and enables the researcher to link the findings to the body of nursing knowledge (Burns & Grove, 2001:171). Frameworks are efficient mechanisms for drawing together and summarising accumulated facts, sometimes from separated and isolated investigations. A framework deals with the abstract concept that is relevant to the study topic, thus providing a general understanding of the phenomenon under investigation (Polit, Beck & Hungler, 2001:111). The purpose of a conceptual framework is to identify the concepts and link these concepts to each

other by means of a literature study of the existing framework such as a model and/or a theory (Rossouw, 2003:99).

This study was based on Orem's theory of *self-care*. This theory focuses on describing and explaining individual care for a person. When the person is unable to provide care for him/herself the nurses, family, groups and community provide the needed assistance. This theory of *self-care* becomes more relevant and grows more significant as HIV and AIDS are increasing worldwide (George, 1999:100).

Nowadays nurses experience difficulty when providing health care to people who are infected with HIV (Ferris, 2006). They realise that to provide meaningful health care, the client or patient should be involved so that he/she can take care of him/herself. Hence, the study focused on the assessment of infant feeding practices by the mothers who were HIV-positive. It is the role of the nurse to inform and empower the mothers and fathers to make the best choice regarding infant feeding.

The reason for selecting the self-care theory of Orem is that this theory addresses self-care. According to George (1999:101) self-care is the performance or practices of activities those individuals initiate and perform on their own behalf to maintain life, health and well-being. When self-care is effectively performed, it helps to maintain structural integrity and human functioning and it contributes to human development.

Health professionals should provide information to the mothers who are HIV-positive regarding PMTCT programmes and the benefits of various infant feeding options. Orem's *self-care* theory is the intervention or practice of activities that individuals initiate and that perform care on their own behalf to maintain life, health and well-being such as to feed and to clean themselves.

The individual's ability to engage in self-care is affected by basic conditional factors. These basic conditional factors are age, state of development, their health status, socio-cultural orientation, health care system factors, family system factors, pattern of living, environmental factors and the adequacy and availability of resources. The age of the mothers may influence the infant feeding practices - young mothers may choose to exclusively breast-feed because they do not have any support or money to buy replacement feeding. Mothers who have enough resources available and stay near a health facility is likely to choose the replacement feeding.

Normally, adults are able to voluntarily care for themselves, while infants and children require complete care or assistance with self-care activities. Orem's theory helps the individuals, their families and others to bring about systems of daily living and support to accomplish self-care. This study intended to apply the theory of self-care by expanding coverage and to provide future mothers who are HIV-positive with information, guidance and support that allows them to choose and adhere to the safest infant feeding strategy for their situation.

1.10 ETHICAL CONSIDERATION

The following ethical consideration measures were adhered to during the study:

1.10.1 The researcher-participant's relationship

The researcher orientated the participants before the study was conducted, in order to build a trusting relationship.

1.10.2 Informed consent

This study intended to provide the participants with adequate information of the study in a way that they could comprehend it. This knowledge would enable them to make their own choice to participate in the research or decline participation if they so wished. In this study the title, purpose, method and objectives of the study was explained to the participants and their verbal and written consent was obtained (Polit *et al.*, 2001: 78). There is wide agreement among all scientists that research involving human beings should be performed with the informed consent of the participants (Bowling, 2002:157).

1.10.3 Permission to conduct the study

Formal request to conduct the study (Annexure B) was written to the Medical Superintendent of Onandjokwe District Health Hospital. The researcher obtained written permission from the study hospital. The authority of the institution was informed about the instruments for data collection and the sample.

1.10.4 Free and voluntary participation

Participants were requested to give their verbal and written consent to participate in the study and they were assured that their rights would not be infringed upon. Participants were informed that they have the freedom to participate in the study or to

withdraw from the study at any time and without submitting reasons, or after all the information had been given to them. This will have no influence on their regular follow-up care.

1.10.5 Confidentiality, anonymity and privacy

The participants were informed that the information collected would be handled with confidentiality. Data would not be linked to individuals personally but reported on the aggregate of the group. The questionnaires were numbered in order not to identify the participants. This was done with the purpose of not mentioning any participant's name to ensure anonymity. Each participant was interviewed alone to ensure privacy.

1.11 SUMMARY OF THE DIFFERENT CHAPTERS

Chapter 1

Chapter 1 serves as the orientation of the study, problem statement, objectives, research methodology, operational definition, conceptual framework, and ethical considerations.

Chapter 2

Chapter 2 provides a detailed literature review of all available sources of information including publications, conference reports and government publications, reports and documents posted in the World Wide Web. MTCT, the PMTCT programme, HIV and infant feeding practices, the constraints facing African women living in poverty and the benefits of the PMTCT programme as well as the challenges facing PMTCT programmes will be reviewed.

Chapter 3

In chapter three the research methodology to assess the infant feeding practises are applied.

Chapter 4

In this chapter the data analysis and the findings are described.

Chapter 5

In chapter 5, conclusions and recommendations are made based on the scientific findings of the study.

1.12 SUMMARY

In this chapter the problem associated with safe infant feeding practices in the prevention of mother-to-child transmission of HIV was highlighted. Furthermore, the need for information regarding the correct choice of infant feeding practices was identified. The next chapter (chapter two) will explore the literature review.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

The aim of this chapter is to review what has been done on HIV and infant feeding, the prevention of mother-to-child transmission of HIV and to find the latest information regarding the best method of how mothers who are HIV positive should feed their infants. Furthermore, a literature review shows that the researcher has identified some gaps in previous research and that the proposed study will fill a demonstrated need (De Vos, 2000:104).

The pandemic of HIV has become a major problem in many countries. During 2009, the UNAIDS estimated that 370 000 children acquired HIV infections through mother-to-child transmission in sub-Sahara Africa (UNAIDS, 2010:80). The most common mode of HIV transmission in children is vertical infection from the women who are HIV-positive to her children during pregnancy, labour and delivery, or through breast feeding (MOHSS, 2006:69).

Many researchers and scholars have published studies on HIV and infant feeding, MTCT and PMTCT. The best sources for these publications were found in conference reports (e.g. scientific articles).

2.2 THE LITERATURE REVIEW

Worldwide, more than 5 million people were receiving HIV treatment in 2009. Of this number, 1.2 million people received HIV antiretroviral therapy for the first time, which showed a 30% increase in the number of people receiving treatment in a single year. Overall, the number of people receiving therapy has grown 13-fold since 2004. This expanding access to treatment has contributed to a 19% decline in deaths among people living with HIV between 2004 and 2009 (UNAIDS, 2010:5).

Furthermore, 10 million people living with HIV who are eligible for treatment under the new WHO guidelines are still in need due to insufficient access to health facilities. New HIV infections are declining in many countries most affected by the epidemic. In 33 countries, the HIV incidence has fallen by more than 25% between 2001 and 2009.

Of these countries, 22 are in sub-Saharan Africa. The countries hardest hit by the epidemic — Ethiopia, Nigeria, South Africa, Zambia and Zimbabwe — have either stabilised or are showing signs of decline and virtual elimination of mother-to-child transmission of HIV is now possible. In 2009, an estimated 370 000 children [220 000 – 520 000] contracted HIV during the perinatal and breast feeding period compared to 500 000 [320 000 – 670 000] in 2001 (UNAIDS, 2010:8).

Namibia had an HIV prevalence of 15.3% at the end of 2009. Among adults, there were 220,000 people living with HIV in the country. HIV prevalence among pregnant women in the country was 18.8 % in 2010 compared to 17.8% in 2008. The 2010 National HIV Sentinel Survey among pregnant women indicates an apparent stabilisation of HIV prevalence since 2004. In Onandjokwe district hospital, HIV prevalence among pregnant women was at 24% in 2010 which is 5.2% higher than the national average (MOHSS, 2010:16).

2.2.1 HIV and AIDS amongst African women

HIV and AIDS are the source of major health problems amongst African women. The consequences of HIV and AIDS left many African women as widows, heading their families and living with HIV. Women who are HIV-positive are often single parents and abandoned by their partners. Some may be unable to turn to their families for help or may live far from them. African women still have trouble accessing health care services due to distance, travel time and money problems (Fleshman, 2004:6).

Women face hurdles as they enter motherhood with HIV and frequent clinical check-ups for the women and after delivery for the child are constant reminders of the HIV infection. Waiting for up to 18 months to find out if the child is infected, and coping with the illness of an infant and not knowing whether it is HIV related, is stressful. Furthermore, if the child is infected it is a hard blow (Ipinge & Le Beau, 2001:109).

2.2.2 Constraints for African women

The roles of African women vary greatly from one culture to another and from one social group to another within the same culture, race, class economic circumstances and age. The culture is dynamic and socioeconomic conditions change over time, so do the roles of African women. Some of the constraints facing the African women are

HIV and AIDS, unemployment, violence and abuse, sexual exploitation and subservient gender roles (Ipinge & Le Beau, 2001:102).

2.2.3 Mother-to-child transmission of HIV

Mother-to-child transmission has become a critical child health problem, contributing to severe child morbidity and significant child mortality. Infants who acquire HIV from their mothers do so during pregnancy, during labour and delivery, or after birth through breast feeding. It is very important for the mother to know the mode of HIV-transmission and start taking care of herself.

2.2.3.1 HIV transmission during pregnancy

In most HIV infected women, HIV does not cross the placenta from the mother to the foetus and the placenta actually shields the foetus from HIV. This protection from the placenta may break if:

- (i) the mother has a viral, bacterial or parasitic placental infection during pregnancy;
- (ii) the mother becomes HIV-infected herself during pregnancy and
- (iii) the mother has severe immune deficiency associated with advanced AIDS

(Limpongsanurak, 2006: 35).

In addition, malnutrition during pregnancy may indirectly contribute to MTCT (Chopra & Rollins, 2007: 288).

2.2.3.2 HIV transmission during labour and delivery

Infants of mothers who are HIV-positive are at great risk of becoming infected with HIV during childbirth. During this single event infants will become infected if no steps are taken to prevent transmission. Most infants who acquire HIV during labour and delivery do so by sucking or aspirating maternal blood or cervical secretions that contain the HI-virus (HIV and breastfeeding, 2006:6).

2.2.3.3 HIV transmission during breast feeding

HIV has been detected in breast milk in cell-free and cell-associated compartments and there is now evidence that suggest that both compartments are involved in transmission of HIV through breast milk (Filteau, 2004:595-600). HIV is present in breast milk, although the viral concentrations in breast milk are significantly lower than those found in the blood. The Joint United Nations Programme on HIV/AIDS

(UNAIDS) indicated that the risk of a baby contracting HIV through the breast milk is lower than the health risks of being denied its nutritional and protective benefits (HIV and breastfeeding, 2006:6). This fact is particularly true in poor countries where mothers do not have adequate and continuous access to clean water to prepare formula feeds.

The first report which drew attention to the possibility of HIV being transmitted through breast milk came in 1985 with a mother who was newly infected with HIV soon after birth through a blood transfusion and whose child was infected presumably through breast feeding. Subsequently, several other reports confirmed this phenomenon among women who were newly infected and transmitted the virus to their infants during the breast feeding period (WHO/UNAIDS, 2000:2).

A study done in Durban, South Africa, suggests that the risk of MTCT through breast feeding depends on a number of factors. These include (i) the pattern of breast feeding (babies who are exclusive breast-fed may have a lower risk of becoming infected than those who consume other liquids, milk or solid food in the first months of life; (ii) breast health (mastitis, cracked and bloody nipples and other indications of breast inflammation are associated with higher risks of transmission) and (iii) breast feeding duration. Furthermore, the risk of MTCT is believed to double if the mother becomes infected with the virus while breast feeding (Coutsoudis, Pillay, Spooner, Kuhn & Coovadia 2001:1850).

The subject of HIV and infant feeding and the importance of exclusive breast feeding has become a debate in the prevention of HIV. One of the reasons for the continued debate is the crude infant and child mortality rates. On the one hand, breast feeding is thought to be responsible for about 300,000 HIV infections per year while UNICEF estimates that breast feeding is responsible for 1.5 million child deaths per year (Coutsoudis, Pillay, Spooner, Kuhn & Coovadia, 2001: 1851-6).

Promoting exclusive breast feeding for 6 months is therefore one of the pillars of child survival. Infant feeding practices of mothers who are HIV-positive is a dilemma: should one try and avert HIV transmission and at the same time risk childhood illnesses such as diarrhoea and pneumonia which are major killers of children (Nishi, Sasi, Erande, Sastry, Pisal, Kapila, Shrotri, Bulhk, Phadke, Bollinger & Shankar,

2003:1326-1331)? It is important to formulate appropriate recommendations, which will help to improve the provision of information to the mothers who are HIV-positive regarding infant feeding.

A study done in Northern Thailand provided evidence of a strong belief that breast feeding is more advantageous than formula feeding because breast milk is convenient, clean, cheap and safe (Talawat, Dore, Le Coeur & Lallemant , 2002:625-631).

In a study done in Tanzania it was found that infant feeding is a great challenge in the prevention of mother-to-child transmission of HIV as feeding options may be difficult to adhere to whether the mother choose exclusive breast feeding or replacement feeding (Leshabari, Blystand & Moland, 2007:544). Another study conducted in South Africa found that the transmission rate of HIV at 6 months was 19.4%, which was the same for infants who were formula fed and those who had been exclusively breast-fed for at least 3 months. Transmission in the mixed breast feeding group was much higher at 26.1%, because giving other foods or liquids as well as breast milk damage the infant's immature digestive system, making it easier for HIV in breast milk to enter the tissues (Nishi *et al.*, 2003:1326-1331).

The babies of mothers who are HIV-positive and are breast-fed for two years or more are more likely to become infected with HIV than babies whose breast feeding was terminated after a few months (UNAIDS, 2004:69).

2.2.3.4 Mixed feeding

Mixed feeding refers to giving other foods or liquids as well as breast milk at the same time. This method is not recommended as it can increase the risk of HIV transmission and death (HIV and breastfeeding, 2009:10).

Mixed feeding will negatively influence the health of the baby born to mothers who are HIV positive (Abdulla, Young, Bitalo, Coetzee & Meyers, 2001: 9). Mothers who practice mixed feeding should be referred to counsellors to review the dangers of mixed feeding and HIV transmission. In some cultures mixed feeding is the norm whether the mother is HIV-positive or not. Where breast feeding is the norm, as in most African settings, women are pressurised to justify reasons for not breast feeding at all or for abrupt weaning. There are many reasons for the early introduction of

complementary or replacement food, such as the necessity to return to employment outside of the home and away from the baby (HIV and breastfeeding, 2006:12).

xxIn another context, there may be cultural pressure to introduce complementary food or liquid to the baby.

2.2.4 Prevention of mother-to-child transmission

A woman who is HIV-positive can pass HIV on to her baby. Most transmission takes place during labour, and delivery, followed by transmission in the uterus and through breast feeding, depending on duration. The longer the child is breast-fed, the greater the risk of HIV transmission (UNAIDS, UNICEF and WHO, 2003:7). A study done in Malawi found that giving babies the antiretroviral drug, nevirapine, for the first fourteen weeks of life lowered the risk of transmission through breast feeding by 60% (Guay & Ruff, 2001: 62).

Another study done in Rwanda looked at the effectiveness of triple antiretroviral treatment given to women who formula fed or breast-fed from birth until seven months after delivery. Only one infant from 176 (0.6%) was infected during breast feeding (Farley & Kesho Bora Study Group, 2006:6). This study points to a possibility that antiretroviral treatment administered to either the child or the mother could be effective in reducing HIV transmission through breast feeding.

To prevent the transmission of HIV from the mother to the child, the World Health Organization stated that infants should be exclusively breast-fed for the first six months of life. Nevirapine prophylaxis should be started at birth for all breast-fed infants and should continue up to 4 weeks after exposure to breast milk has ended. However, for those mothers put on ARVs for their own health and for mothers who choose replacement feeding, the infants should only take nevirapine for 6 weeks (WHO, 2010: 6).

Prevention of mother-to-child transmission includes 4 main strategies:

- i) Primary prevention of HIV infection;
- ii) Prevention of unintended pregnancy in HIV infected women;
- iii) Prevention of HIV transmission from HIV infected women to their infants and
- iv) Provision of comprehensive care to mothers living with HIV, their children and families (UNAIDS, UNICEF and WHO, 2003: 7).

2.2.4.1 Benefits of PMTCT programmes

PMTCT is one of the most powerful HIV prevention measures. It combines prevention with care and treatment for both mother and child. The World Health Organization's recommendations have great potential to improve the mother's own health and to reduce the risk of mother-to-child transmission to less than 2% for mothers on highly active antiretroviral therapy (HAART) (WHO, 2010:6). Counselling and testing is an entry point into the HIV care continuum and lays the groundwork for PMTCT interventions (Fewtrell, 2004: 97-103).

2.2.4.2 Challenges facing PMTCT programmes

The major challenges in scaling up national PMTCT services and implementing the new recommendation are weak health infrastructure, limited management capacity and limited funding and support for PMTCT. However there are many hopeful signs that PMTCT programmes now have greater priority both at the national and international level. Postnatal HIV transmission during breast feeding remains a constraint to a successful PMTCT programme. Lack of appropriate trained staff at PMTCT sites and poor counselling for pregnant women regarding infant feeding will prevent the success of PMTCT programmes (WHO and UNICEF, 2007: 23).

2.2.4.3 Participation of governmental and non-governmental organisations in PMTCT programmes

Governments and donors today recognise that PMTCT programmes require more than a provision of drugs and commodities. Health systems have to be strengthened and communities must be prepared for these programmes. Various organisations have recognised the need for the promotion of correct infant feeding practices to prevent mother-to-child-transmission of HIV for a long time and played a crucial role in this regard. One of the landmarks in this recognition is several trials which were undertaken in sub-Saharan countries to investigate the effect of peri-partum and infant feeding interventions in risk reduction of MTCT (Global Breast feeding and HIV, 2009:5). Some of the trials included prevention of HIV transmission in the peri-partum period and infant feeding practices. A growing number of countries now have national plans and are making significant progress in expanding more effective PMTCT services.

Mothers known to be HIV-infected who decide to stop breast feeding at any time should stop gradually within one month. Mothers or infants who have been receiving ARV prophylaxis should continue prophylaxis for one week after breast feeding is fully stopped. Stopping breast feeding abruptly is not recommended. Where ARVs are available, mothers known to be HIV-infected are now recommended to breast-feed until 12 months of age (WHO, 2010: 6).

2.2.5 Gap between Namibian Policy and WHO guidelines

There is a gap between the Namibian Policy and WHO regarding the length of time for exclusive breast feeding in the context of HIV infection [4 versus 6 months] (PMTCT in Namibia, MOHSS: 2005: 61).

The current WHO recommendations for infant feeding by mothers who are HIV-positive stipulates that infants should be exclusively breast-fed for the first six months of life to achieve optimal growth, development and health. When replacement feeding is acceptable, feasible, affordable, sustainable and safe, avoidance of all breast feeding by mothers who are HIV-positive is recommended. Otherwise, exclusive breast feeding is recommended during the first months of life (WHO UNAIDS, UNICEF and UNFPA, 2007: 325).

Namibian Policy recommends that safer infant feeding options be discussed with the pregnant women living with HIV. Counselling on infant feeding provides necessary information regarding feeding options so that the mother can make the best choice for herself and her family.

Namibian Policy (2004:16) and WHO recommend that replacement feeding can be a good option provided it is acceptable, affordable, sustainable, feasible and safe (AFASS). To minimise the risk of HIV transmission, breast feeding should be discontinued as soon as it is feasible or between 4 to 6 months of age, taking into account local circumstances, the individual woman's situation and the risk of replacement feeding (including infections other than HIV and malnutrition). Rapid weaning is suggested, recognising that this is difficult and the mother and infant will require support. When mothers who are HIV-infected choose not to breast-feed from birth or to stop breast feeding later, they should be provided with specific guidance

and support for at least the first two years of the child's life to ensure adequate replacement feeding (HIV and breastfeeding, 2009: 64).

Despite its importance to the infant and mother's health, exclusive breast feeding for six months is challenging. Namibia has a strong breast feeding culture; about 94% of mothers initiate breast feeding. Although Namibia has a sound policy to promote, protect and support breast feeding namely "The Baby and Mother Friendly Initiative" of 1992, actions to promote, protect and support breast feeding have currently declined due to the dilemma of HIV/AIDS and transmission of HIV through breast feeding (MOHSS, 2004:2).

During the time of this study nevirapine (NVP) or zidovudine (AZT) prophylaxis to babies was not yet introduced. With the recent introduction of NVP/AZT for the babies through breast feeding, it could be found that The Baby and Mother Friendly Initiative will find more support.

2.2.6 Stigmatisation

Stigma will remain a major barrier to curbing HIV/AIDS. Some women who are HIV-positive continue to breast-feed their babies up to two years because they fear stigmatisation from the members of their family and by the community at large. A study done in Tanzania demonstrated that HIV-positive mothers feared disclosure of their HIV-positive status during breast feeding due to stigmatisation. This was due to the strong cultural position that breast feeding is the only acceptable infant feeding method and the only way to fulfil ideals of being good mothers (Leshabari, Blystand & Moland, 2007: 549). Popular reasons for not breast feeding or giving mixed feeding is stigmatisation, absence or insufficiency of breast milk, a disease or job outside the home. Mothers who decide to breast-feed their babies do so because breast milk is best for the babies (Chikwampu, Bond, Muvalle, Mitimangi, Habimanda & Ayles, 2001: 333-358).

2.3 SUMMARY

This chapter discussed MTCT as the most significant source of HIV infection in young children. The virus may be transmitted during pregnancy, labour or delivery or through breast feeding. The challenges facing the PMTCT programme was discussed. It was also highlighted that various organisations recognised that the infants of HIV-

positive mothers should be exclusively breast-fed for the first six months of life to achieve optimal growth, development and health. In chapter 3 the research methodology will be discussed.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

The aim of this chapter is to define the research methodology that has been applied to assess the infant feeding practices in Onandjokwe District Hospital: Oshikoto region Northern Namibia, in the prevention of mother-to-child transmission of HIV. In this chapter the following will be discussed: the research approach and design, population and sampling, data instrument, pilot study, reliability and validity, how the data was collected, data analysis and presentation of the results.

3.2 THE RESEARCH APPROACH

For the purpose of this research a quantitative approach has been used. Quantitative approach yields objective data that is typically expressed in numbers. A quantitative approach is used to describe variables, to examine the relationship among variables and to determine cause-and-effect interaction between variables (Burns & Grove, 2001: 64).

3.3 THE RESEARCH DESIGN

The researcher decided to use a descriptive and exploratory design for this particular study by means of questionnaires. In this research study, infant feeding practices in the prevention of mother-to-child transmission were assessed. There was a need for the researcher to be open minded, interact harmoniously with the participants so that they could feel free to express themselves. The aim was to have access to unbiased information from the participants.

3.4 POPULATION AND SAMPLING

According to Burns and Grove (2001: 366), a population implies substances that meet the criteria of the sample for inclusion in a study. The population was the mothers who are HIV-positive and enrolled in the PMTCT programme in Onandjokwe District Hospital, Oshikoto region and came for postnatal follow-up six weeks post-delivery care between 1 August and 31 November 2006.

Onandjokwe District Hospital serves a population of about 150 000 people in the northern aspect of Namibia. The PMTCT programme is currently implemented at the

Onandjokwe District Hospital. During the time of study 415 women attended post-natal care in Onandjokwe District Hospital. Two hundred and forty women were HIV-negative, 115 women had an unknown HIV status and 71 women were HIV-positive (Onandjokwe District Hospital: 2005: 24).

3.5 SAMPLE SIZE

Sampling refers to the process of selecting the sample from the population in order to obtain the information regarding a phenomenon in a way that represents the population of interest (Brink, 2006: 134). The larger the sample size, the more accurately their answers will truly reflect the population. This indicates that for a given confidence level, the larger your sample size, the smaller the confidence interval. However, the relationship is not linear (i.e., doubling the sample size does not halve the confidence interval).

The study participants were selected through convenience sampling. Convenience sampling also referred to as accidental sampling entails the use of the most convenient available people or objects as subjects in study (Polit & Hungler, 1999: 281).

During the time of the study, which was a period of three consecutive months, only 60 clients (mothers who are HIV-positive) who arrived at the postnatal clinic and who agreed to participate in the study were interviewed. These 60 participants represent 85% of the population (mothers who were HIV-positive and enrolled for the PMTCT Programme for the year 2005).

The inclusion criteria for selection of the sample were:

- Mothers that are HIV-positive and
- Have enrolled for the PMTCT Programme at the Onandjokwe District Hospital.

3.6 DATA INSTRUMENT

An instrument is the device or technique that a researcher uses to collect data (questionnaires, observations, interviews, scales and tests) (Polit & Hungler, 2001: 342).

The questionnaire was designed after an in-depth literature study. It was designed according to the objectives of the study as stated in chapter one. The questionnaire consists of three sections. Section A: Personal details and demographic data, Section B: Knowledge on HIV/AIDS and the PMTCT Programme and Section C: Infant feeding practices. Open-ended and closed questions were used in the questionnaire (Annexure D). Open-ended questions allow the participant to answer the question as she wishes and it provides richer information. The researcher felt that some of the questions required more in-depth responses or detailed explanations to assess the understanding of the participants.

3.7 PILOT STUDY

A pilot study is defined as a small-scale study conducted prior to the main study on a limited number of subjects from the population (Brink, 2006:166). This means that it is developed similarly to the proposed study using similar subjects, the same setting and the same collection and analysis techniques. A pilot study is conducted to:

- determine whether the proposed study is feasible;
- identify problems with the design;
- develop or refine the data collection instrument;
- assess the validity and reliability of the research instrument; and
- determine whether the sampling technique is effective (De Vos, 2000: 179).

A pilot study was done and the questionnaire was pre-tested using fifteen mothers (which constituted 25% of the sample) who are HIV-positive and possessing similar characteristics to those participants used for the major study and who met the inclusion criteria. It was done to determine possible problems or shortcomings in the methodological approach and instruments.

During the pilot study, some of the questions were not clear to participants and were subsequently reviewed by the researcher. Some of the multiple choice questions were changed to the definition of terms, such as HIV/AIDS and PMTCT, in order to allow assessment of the understanding of the participants. Furthermore, the initial questionnaire excluded first time parents. The researcher believes that this was not an exclusion criterion for the study. The idea was to include all mothers irrespective of parity. None of the changes made to the instrument influenced the objectives of the

study. The participants of the pilot study did not participate in the main study. The data obtained during the pilot study was not included in the final data analysis.

3.8 RELIABILITY AND VALIDITY

Reliability refers to the consistency of the instrument to assess if the same response is elicited when used repeatedly. It further refers to the homogeneity of the instrument and the degree to which it is free from random error (Bowling, 2002: 147). To ensure the reliability of the instrument, the pilot study was conducted using participants who complied with the inclusion criteria of the main study.

Reliability is increased when:

- the researcher has personal knowledge or experience about the subject; and
- when the researcher is familiar with the research environment (Brink, 2006: 100).

The researcher was familiar with the research environment. The fact that the researcher was not officially involved with any of the postnatal care also increases the validity and reliability of the research. A pilot study was conducted and minor adjustments were made to the questionnaire afterward.

Validity is an assessment of whether an instrument measures what it aims to measure (Bowling, 2002: 147). An instrument is assigned valid after it has been satisfactorily tested repeatedly in the population for which it was designed. This type of validity is known as internal validity. Selection bias is the biggest threat to internal validity (Polit & Hungler, 1999: 411). This can be ensured by addressing the important issues of the verification of data analysis results. According to De Vos (2000:351), the verification involves checking for the most common biases that can influence the process of drawing conclusions. The researcher continuously consulted with the study supervisor during the data analysis process and verified conclusions with existing literature. To ensure content validity, the researcher discussed the content of the questionnaire with an expert in the field of HIV/AIDS, management, education and community health nursing. After the discussions, some adjustments were made and some of the questions were rephrased. To increase the response validity, the researcher herself did the interviews.

3.9 DATA COLLECTION

Data collection is the process of collecting the data from the chosen participants (Granger & Chulay, 1999: 116). The study was conducted for a consecutive period of four months from 1 August to 31 November 2006. The length of time of each interview was about 45 minutes. The interviews were conducted at antenatal (ANC) clinics. The data was collected with the use of structured questionnaires that consisted of a combination of closed- and open-ended questions (Annexure F). The researcher completed the questionnaires. Before the collection of the data, the researcher introduced herself to the participants and explained the purpose of the study. The questionnaires were translated in Oshiwambo in order to clarify some points and this was the language preferred by the participants. Oshiwambo is the researcher's first language and the translation was checked for accuracy by a nursing colleague who is an expert in research.

3.10 DATA ANALYSIS

Data analysis is conducted to reduce, organise and give meaning to data. Data analysis is the systematic organisation and synthesis of the research data (Polit, Beck & Hungler, 2001: 460). Interpretation refers to the process of making sense of the results and examining the implications of the findings within a broader context.

Data was captured electronically in MS Excel (version 2003) and verified and cross-checked by the researcher. The presentation of results was mostly descriptive in nature by using frequency tables and a pie chart. There was no need to compare variables as it was not part of the study objectives. Data yielded from the open-ended questions were quantified and reported on quantitatively.

3.11 ETHICAL CONSIDERATIONS

Ethical considerations were explained in more detail in chapter 1 and included consent obtained from the Ministry of Health and Social Services and Onandjokwe District Hospital to conduct the research as well as consent from all participants. Participation was voluntary and participants retained their right to withdraw at any time without any pressure or coercion. Participant's anonymity and confidentiality were assured.

3.12 LIMITATIONS

The study was only conducted in the Onandjokwe district in Namibia and this could be regarded as a limitation. Generalisation of mothers who are HIV-positive in the whole Namibia would not be possible. The study's findings can only be generalised to mothers who are HIV-positive in the selected district which the study has been conducted. Although it was accepted that the participants would answer honestly to the questionnaire, the presence of the researcher might have influenced them to answer the different questions in a manner in which they thought it should be answered.

The researcher tried to overcome this limitation by explaining to them that the information would be confidential and by having a non-judgmental attitude.

3.13 SUMMARY

This chapter has discussed the research methodology which includes the research approach and design, population and sampling, data instruments, pilot study, reliability and validity, data collection and data analysis. The next chapter (chapter four) will present a discussion of the results of the study.

CHAPTER 4: PRESENTATION, ANALYSIS AND INTERPRETATION OF RESULTS

4.1 INTRODUCTION

In this chapter, information obtained from the questionnaires is presented, analysed and interpreted. The process of data analysis is characterised by refining, clarifying and sharpening of statements, concepts and theories found in the literature (Bowling, 2002:203). The questionnaire consists of three sections. Section A focused on personal details and demographic data, Section B focused on knowledge regarding PMTCT programmes, Section C focused on knowledge and practices on infant feeding. The data gained from each section of the questionnaire was analysed. Sixty participants (N=60) participated in the study.

4.2 SECTION A: PERSONAL DETAILS AND DEMOGRAPHIC DATA

Questions 1-8 related to personal details and demographic data.

4.2.1 Age

The question relates to the subjects' age. Of the sample N=60, 90% (n=54) were between 20 and 35 years, 7% (n=4) were 36 years and above and 3% (n=2) were between 15 and 19 years. The ages of participants are reflected in table 4.1.

Table 4.1: Age of the participants

| Ages in year's | n | % |
|-----------------------|-----------|------------|
| 15 - 19 | 2 | 3 |
| 20 - 35 | 54 | 90 |
| 36 and above | 4 | 7 |
| Total | 60 | 100 |

4.2.2 Gravida

Table 4.2 reflects the number of previous pregnancies. Of the participants, 68% (n=41) indicated that it was their first or second pregnancy. While 32% (n=19) had been pregnant three times and above.

Table 4.2: Gravida

| Gravida | n | % |
|----------------|-----------|------------|
| 1-2 | 41 | 68. |
| 3 and above | 19 | 32 |
| Total | 60 | 100 |

4.2.3 Parity (The number of live children born to the mother)

Of the total sample N=60, 58% (n=35) had 1-2 children. Nineteen (n=19/32%) had 3–5 children, while 10% (n=6) had 6 children and more.

Table 4.3: Parity

| Para | n | % |
|--------------|-----------|------------|
| 1 - 2 | 35 | 58 |
| 3 – 5 | 19 | 32 |
| 6 and more | 6 | 10 |
| Total | 60 | 100 |

4.2.4 Marital status

In response to the question which asked the respondents about the marital status, 88% (n=53) were single, 10% (n=6) were married and 2% (n=1) was widowed. None of the participants were divorced. It could be assumed that the fact that most of the women are single parents could influence their socio-economic circumstances and probably their choice of infant feeding option.

Table 4.4: Marital status of the participants

| Marital status of participants | n | % |
|---------------------------------------|-----------|------------|
| Single | 53 | 88 |
| Married | 6 | 10 |
| Divorced | 0 | 0 |
| Widowed | 1 | 2 |
| Total | 60 | 100 |

4.2.5 Employment status

Table 4.5 indicates that most (n=57/95%) of the participants were unemployed, while only 5% (n=3) indicated that they are permanently employed. None of the participants

were doing temporary work. The fact that most are unemployed could also have an influence on their choice of infant feeding.

Table 4.5: Employment status of the participants

| Employment status | n | % |
|--------------------------|-----------|------------|
| Permanent employed | 3 | 5 |
| Unemployed | 57 | 95 |
| Temporal work | 0 | 0% |
| TOTAL | 60 | 100 |

4.2.6 Educational status

According to Table 4.6, 83% (n=50) of the participants have completed Grade 8-12 and 15% (n=9) completed Grade 1-7. Only one participant (n=1/2%) never attended school. None of the participants had diplomas, degrees or other qualifications.

Table 4.6: Educational status of the participants

| Educational status | n | % |
|---------------------------|-----------|------------|
| Never attended school | 1 | 2 |
| Grade 1-7 | 9 | 15 |
| Grade 8 -12 | 50 | 83 |
| Other | 0 | 0 |
| Total | 60 | 100 |

4.2.7 Housing

From Table 4.7 it is apparent that 78% (n=47) of participants were living in the villages, 17% (n=10) were living in informal settlements and 5% (n=3) were living in formal settlements. None of the participants were living in single quarters or flats. It could be assumed that mothers who are living in informal settlements or villages would rarely meet all the necessary criteria (affordable, feasible, acceptable, sustainable and safety) for replacement feeding.

Table 4.7: Types of houses

| Types of houses | n | % |
|------------------------|-----------|------------|
| Single quarters | 0 | 0 |
| Flats | 0 | 0 |
| Informal settlement | 10 | 17 |
| Formal settlement | 3 | 5 |
| Village | 47 | 78 |
| Total | 60 | 100 |

4.2.8 Distance

Table 4.8 illustrate that 73% (n=44) of participants stay less than 10 km from the health centre and 27% (n=16) need to walk between 10-49 km to reach the health care centre. None of the participants walk a distance of 50 km or more. It could be assumed that participants' accessibility to health facilities can reduce child mortality in case the child develops a serious illness such as diarrhoea or pneumonia.

Table 4.8: Distance from the health facilities

| Distance from the health facilities | n | % |
|--|-----------|------------|
| Less than 10km | 44 | 73 |
| 10 - 49km | 16 | 27 |
| 50 -100km | 0 | 0 |
| More than 100km | 0 | 0 |
| Total | 60 | 100 |

4.3 SECTION B: KNOWLEDGE ON HIV/AIDS AND PMTCT PROGRAMMES

This section assessed the knowledge of the mother regarding HIV/AIDS and the PMTCT programme. The first 4 questions were open-ended and were quantified and analysed and reported upon quantitatively.

4.3.1 HIV

The participants were asked what HIV is. All of the participants (n=60/100%) knew the meaning of HIV. HIV stands for human immunodeficiency virus. HIV is the virus that can cause AIDS. The above finding shows that the mothers who are HIV-positive

know the meaning of HIV. This could be an indication that there is good counselling and transfer of knowledge in the PMTCT programme.

4.3.2 Transmission of HIV

The findings further revealed that all the respondents (n=60/100%) listed all the correct methods of transmission. HIV can be transmitted through having sex with an infected partner, mothers who are HIV-positive pass it on to their babies during pregnancy, at birth or during breast feeding. According to Preble & Piwoz (2001: 9), HIV is transmitted through mothers passing it on their children (during pregnancy, at birth or during breast feeding), having sex with an infected partner, infected blood through blood transfusion and through instruments (e.g. razor, needle) which may have blood on them and are not sterilised.

4.3.3 AIDS

In response to what AIDS is, all the respondents (n=60/100%) gave the correct answer. According to Nzimande (2003:36) AIDS stands for Acquired Immune Deficiency Syndrome which is caused by HIV and impairs the body to fight infection with result that the body becomes extremely susceptible to life threatening disease. All the above indicate good knowledge transfer from counselling of mothers.

4.3.4 PMTCT

Of the respondents (N=60) who participated in the study, 83% (n=50) of the respondents understood what PMTCT is. According to the World Health Organization, PMTCT can be defined as the prevention of mother-to-child transmission of HIV (WHO, 2007:9). Ten (n=10/17%) participants indicated that they don't understand what PMTCT is. These ten participants explained that PMTCT is to test the HIV status of all pregnant mothers during antenatal care. Provision of information to the mothers regarding prevention of mother-to-child transmission will help them to make an informed choice in preventing mother-to-child transmission.

4.3.5 Heard about PMTCT Programme

Table 4.9 indicates that 83% (n=50) of participants indicated that they had heard about the PMTCT programme before attending antenatal care. Ten (n=10/17%) indicated that they never heard about the PMTCT programme before attending antenatal care.

Table 4.9: Heard about PMTCT Programme

| Heard about PMTCT Programme | n | % |
|------------------------------------|-----------|------------|
| Yes | 50 | 83% |
| No | 10 | 17% |
| Total | 60 | 100 |

4.3.6 Where did you hear about PMTCT Programme?

According to Table 4.10, 58% (n=35) participants identified health facilities as the source of information regarding the PMTCT programme. Such findings correlate with the evidence from the literature that the health facilities are the most important source of health information; therefore health workers need to be up-to-date with health information in order to provide it to other people (MOHSS, 2002: 2).

Table 4.10: Where did you hear about the PMTCT Programme?

| Where did you heard about PMTCT Programme | n | % |
|--|-----------|------------|
| Media | 12 | 20 |
| Churches | 10 | 16 |
| Health facilities | 35 | 58 |
| Private doctors | 0 | 0 |
| Others | 3 | 5 |
| Total | 60 | 100 |

Twelve (n=12/20%) participants heard about the PMTCT programme from the media such as radio, television, pamphlets and newspapers. Ten (n=10/17%) of the participants have heard about this programme through churches, while three (n=3/5%) heard about it either from friends or relatives. None of the participants indicated that they heard of the PMTCT Programme through private doctors. It is not that there are no private doctors in the district but it can be assumed that mothers cannot afford to pay the private doctors.

4.3.7 Usefulness of the PMTCT Programme

Table 4.11 reflected that 83% (n=50) participants indicated that the programme for the PMTCT is useful, while 17% (n=10) indicated that they don't know. None of the participants indicated that that the PMTCT programmes are not useful. Information and education on prevention of mother-to-child transmission and its benefits should

urgently be directed to the general public, affected families and communities (MOHSS, 2003: 46).

Table 4.11: Usefulness of the PMTCT Programme

| Is PMTCT useful? | n | % |
|-------------------------|-----------|------------|
| Useful | 50 | 83 |
| Not useful | 0 | 0 |
| Don't know | 10 | 17 |
| TOTAL | 60 | 100 |

4.3.8 When did the participants find out that they are HIV-positive?

Table 4.11 indicates that 78% (n=47) of participants found that they were HIV-positive during pregnancy. Such findings correlates with findings from literature that antenatal testing and counselling (including infant feeding options) for HIV infected pregnant women are part of the strategy to reduce HIV transmission during breast feeding. Such strategies must include high rates of antenatal testing and use of interventions to reduce HIV transmission (WHO UNAIDS, UNICEF and UNFPA, 2007: 69).

This is supported by the Government of the Republic of Namibia which states that the cornerstone of a successful PMTCT programme is a high rate of HIV testing among pregnant women in order to identify those who are positive and at risk of transmitting the virus to their babies. HIV testing should be routinely provided at the first antenatal visit or at any other opportunity for all pregnant women who request it (Republic of Namibia, 2004: 32).

Thirteen (n=13/22%) participants knew their HIV status before they became pregnant (recently). According to UNICEF (2003:12), providing appropriate counselling and support to women living with HIV is vital and will enable them to make an informed decision about their future reproductive life with special attention to prevent unintended pregnancies. More could be done to ensure HIV counselling and testing for all women in their reproductive years (even before they become pregnant).

None of the participants knew their HIV status during labour. This indicates that all the participants knew their HIV status before the onset of labour. This also shows that pregnant women accepted the routine counselling and testing during pregnancy.

The participants were not asked whether they were on ARVs or whether prophylaxis was given to their babies as it was not relevant at the time of the study.

Table 4.12: When did the participants find out that they are HIV-positive

| When did the participants find out that they are HIV-positive? | n | % |
|---|-----------|------------|
| Before pregnancy | 13 | 22 |
| During pregnancy | 47 | 78 |
| During labour | 0 | 0 |
| Total | 60 | 100 |

4.4 SECTION C: INFANT FEEDING PRACTICES

This section assessed the infant feeding practices chosen by the mothers, the advantages and disadvantages for all feeding methods in the PMTCT programme and when the mother decided upon that specific feeding method.

Safer infant feeding reduces the risk of the infant becoming infected through breast milk. Provision of information to the mothers regarding infant feeding practice will help them to choose the best method to feed their babies. The World Health Organization recommends that pregnant women and mothers known to be HIV-infected should be informed of the infant feeding practice recommended by the national or sub-national authority to improve HIV-free survival of HIV-exposed infants and the health of HIV-infected mothers, and informed that there are alternatives that mothers might wish to adopt (WHO, 2010: 6).

4.4.1 Feeding methods chosen by the participants

Participants were divided into three groups according to their choices of infant feeding practices. Of the total sample (N=60), 70% (n=42) of participants breast-fed exclusively, 20% (n=12) of participants used replacement feeding and 10% (n=6) participants used mixed feeding as shown in Table 4.13.

Table 4.13: Feeding methods

| Feeding methods | n | % |
|--------------------------|-----------|------------|
| Exclusive breast feeding | 42 | 70 |
| Replacement feeding | 12 | 20 |
| Mixed feeding | 6 | 10 |
| TOTAL | 60 | 100 |

4.4.2 Does breast milk add an additional chance (risk) of HIV transmission

Of the total sample (N=60), 98% (n=59) of participants indicated that breast milk increased the risk of HIV transmission to the baby. This is correct according to the literature. While breast feeding carries significant health benefits to infants and young children, HIV can be transmitted during breast feeding from an HIV infected mother to her infant (WHO, UNAIDS, UNICEF & UNFPA, 2007:71). Only one (n=1/2%) participant indicated that breast milk added no additional chance (risk) of HIV transmission to the baby.

4.4.3 Whether mothers who are HIV-positive should breast-feed their babies

In response to the question of whether mothers who are HIV-positive should breast-feed their babies, 80% (n=48) of participants listed that the mothers who are HIV-positive should breast-feed their babies. When asked to give a reason for this answer, they stated that breast milk contains all the nutrients needed by the babies and breast-fed babies grow very well. It could therefore be assumed that most of the mothers knew the advantages of breast milk. The literature study in chapter 2 showed that the risk of a baby contracting HIV through breast milk is lower than the health risks of being denied its nutritional and protective benefits. This is also supported by literature that breast feeding is more advantageous than formula feeding because breast milk is convenient, clean, cheap and safe (Breast feeding and HIV, 2009: 12).

The study revealed that the twelve (n=12/20%) participants who chose replacement feeding did so because they thought their babies will become infected with HIV if they breast-feed them. Although a baby could get infected with HIV through breast

feeding, the baby might still test HIV-positive despite not breast feeding at all. The World Health Organization recommends that mothers known to be HIV-infected (and whose infants are not HIV infected or of unknown HIV status) should breast-feed their infants exclusively for the first 6 months of life (WHO, 2010: 6).

4.4.4 Exclusive breast feeding

All the participants (n=42/100%) who were breast feeding exclusively knew what exclusive breast feeding is.

4.4.5 Deciding about exclusive breast feeding

Table 4.12 reflects that 72% (n=30) of participants who exclusively breast-fed their babies decided about exclusive breast feeding during antenatal care. One (n=1/2%) participant decided in the labour ward and eleven (n=11/26%) participants decided to breast-feed exclusively soon after delivery. Although the majority (n=30/72%) of the participants decided to breast-feed during the antenatal period, there were still mothers who postponed their decision until the baby was born. This should be discouraged because it seems as if mothers come to the hospital for delivery unprepared on how to feed their babies.

According to (UNAIDS, 2007: 5), to help the mothers who are HIV-positive make the best choice, they should receive appropriate counselling that includes information about the risks and benefits of various infant feeding options based on local assessments and guidance in selecting the most suitable option for their own situation. Counselling and the provision of information and support during the antenatal period is the key for women to make informed choices.

Table 4.14: Decision regarding exclusive breast feeding

| Decision regarding exclusive breast feeding | n | % |
|--|-----------|------------|
| ANC | 30 | 72 |
| Labour ward | 1 | 2 |
| Soon after delivery | 11 | 26 |
| TOTAL | 42 | 100 |

4.4.6 Who were involved in the decision of exclusive breast feeding

In response to this question, 57% (n=24) of participants indicated that nobody was involved in the decision, while 43% (n=18) involved someone such as their partners, husbands, mothers, health workers and grandmothers in the decision. This shows that mothers shared their HIV-status with significant people in their lives. Health workers should not decide for the mothers, but should support the mother's decision (HIV and Infant Feeding, 2009: 39).

4.4.7 Duration of breast feeding

In response to the question which asked the participants how long they are going to breast-feed, 86% (n=36) indicated that they will breast-feed their babies exclusively for six months, while 14% (n=6) indicated that they will breast-feed their babies exclusively for four months. This could be explained by policy differences between Namibia and WHO regarding the length of time for exclusive breast feeding in the context of HIV infection (MOHSS, 2004: 63).

4.4.8 Were you told not to breast-feed?

All participants that chose to breast-feed (n=42/100%) indicated that they were not told not to breast-feed exclusively by anyone.

4.4.9 Were you forced to choose breast feeding?

All the participants (n=42/100%) was not forced to breast-feed exclusively. This indicated that exclusive breast feeding was the mother's choice.

4.4.10 Advantages and disadvantages of exclusive breast feeding in the PMTCT Programme

4.4.10.1 Advantages

The data showed that all the participants that exclusively breastfed their babies (n=42/100%) gave the following reasons for the advantages of exclusive breast feeding in the PMTCT Programme: (i) breast milk is cheap – there's no need to buy it; (ii) breast milk is best for the baby; (iii) breast milk contains both vitamins and nutrients; (iv) breast feeding protects against many infections; and (v) breast feeding provides closeness and contact between mother and baby which help psychological development.

4.4.10.1 Disadvantages

The findings further revealed that 98% (n=41) of participants indicated that the disadvantage of exclusive breast feeding in the PMTCT programme is the possibility that the baby can be infected with HIV.

This shows that mothers were educated about the fact that HIV can be transmitted through breast milk. Only one (n=1/2%) participant indicated that she does not know the disadvantage of exclusive breast feeding in the PMTCT programme.

4.4.11 When to add other food or liquids

Thirty six (n=36/86%) participants indicated that they would add food/liquids at six months, while six (n=6/14%) participants indicated that they would add solid food/liquids at four months of age. This difference is because of the differences in the duration of breast feeding as explained in section 4.4.7.

4.4.12 Replacement feeding

All the participants who chose replacement feeding (n=12/100%) knew what replacement feeding is. Replacement feeding can be defined as the process of feeding a child who is not receiving any breast milk with a diet that provides all the nutrients the child needs until the child is fully fed on family food (WHO, 2007: 10).

4.4.13 Decision about replacement feeding

In the response to the questions which asked the participants who chose replacement feeding and when they decided about replacement feeding, 50% (n=6) of participants indicated that they decided on replacement feeding during antenatal care, 17% (n=2) decided during labour and 33% (n=4) decided soon after delivery. A higher percentage of mothers chose to use replacement feeding after delivery (n=4/33%) than exclusive breastfeeding (n=1/26%).

Table 4.15: Decision regarding replacement feeding

| Decision regarding replacement feeding | n | % |
|---|-----------|------------|
| ANC | 6 | 50 |
| Labour ward | 2 | 17 |
| Soon after delivery | 4 | 33 |
| TOTAL | 12 | 100 |

4.4.14 Who is involved in the decision of replacement feeding

This study revealed that 67% (n=8) participants indicated that their partners were involved in the decision of replacement feeding. This shows that partners can also provide support during infant feeding. The data also shows that one (n=1/8%) participant indicated that nobody was involved in the decision, while two (n=2/17%) involved the mother/sister and one (n=1/8%) participant was advised by the doctor not to breast-feed because she was on tuberculosis (TB) treatment.

It is quite rare for mothers who are single, living in informal settlements and who are unemployed to meet all the necessary criteria (affordable, feasible, acceptable, sustainable and safety / AFASS) for replacement feeding. This group of mothers represent those at the lower end socio-economic class. The financial constraints and lack of social support would make it difficult to meet the requirements of AFASS.

4.4.15 Afford to buy replacement feeding

With regard to the question whether the participants could afford to buy replacement feeding, the majority (n=10/83%) indicated that they can afford to buy replacement feeding with the assistance from their partners, husbands, mothers and from their sisters, while two (n=2/17%) participants indicated that they would not be able to afford to buy replacement feeding. This is alarming and it should be stressed that when mothers who are HIV-positive choose not to breast-feed from birth, they should be provided with specific guidance and support for at least the first 2 years of the child's life to ensure adequate replacement feeding. Although Namibian guidelines stresses that the mothers who are HIV-positive should be supported, the Namibian Government does not distribute free infant formula (MOHSS, 2004: 64).

4.4.16 Preparation, storage and demonstration of replacement feeding

None of the participants indicated that the health workers demonstrated preparation and storage to them. This shows that there is a lack of health education from the health worker's side regarding preparation and storage of replacement feeding. Mothers who are HIV-positive, and who choose to give replacement feeding milk, need to know how to prepare and store replacement feeds for their infants in the safest possible way to reduce the risk of illness. It is the duty of the health workers to educate mothers during antenatal visits and this should continue after delivery.

4.4.17 Advantages and disadvantages of replacement feeding in the PMTCT programme

4.4.17.1 Advantage

The data showed that all (n=12/100%) participants gave the following reason for the advantages of replacement feeding in the PMTCT programme: the baby will not be infected with HIV through breast milk.

4.4.17.2 Disadvantages

The data further revealed that all (n=12/100%) participants gave some of the following reasons for the disadvantages of replacement feeding in PMTCT programme:

(i) Poor preparation of replacement feeding increases the risk of illness such as diarrhoea, pneumonia and death, (ii) replacement feeding is very expensive, (iii) babies do not grow well when they are on replacement feeding, (iv) time is needed to prepare, to wash and to boil the utensils and (v) hygiene is important in the preparation of replacement feeding.

The findings show that the mothers were aware that replacement feeding should be adequately prepared to reduce the risk of infant mortality.

4.4.18 Mixed feeding

All participants (n=6/100%) who chose mixed feeding knew what mixed feeding is. The World Health Organization defined mixed feeding as breast feeding with the addition of fluids, solid foods and/or non-human milk such as formula (WHO, 2007: 10).

4.4.19 Why mothers who were HIV-positive were discouraged to use mixed feeding

In response to this question, 50% (n=3) of the participants who chose mixed feeding indicated that they knew that mothers who were HIV-positive were discouraged to use mixed feeding. These participants were told by counsellors/health workers that mixed feeding is not good, because extra food and liquid damage the infant's immature digestive system. The study revealed that participants were counselled against using

mixed feeding, but yet they still gave their babies mixed feeding. It could be assumed that there are other reasons why these mothers chose mixed feeding.

The study further revealed that 50% (n=3) participants indicated that they did not know why mothers who are HIV-positive were discouraged to use mixed feeding. This indicates that they were not informed about the dangers of mixed feeding. All mothers who are HIV-positive should receive counselling on feeding, which includes provision of general information about risks and benefits of various infant-feeding options (MOHSS, 2004: 66). Adequate numbers of people who counsel the mothers who are HIV-positive on infant feeding should be trained, deployed, supervised and supported. Such support should include updated training as new information and recommendations emerge.

Table 4.16: Why mothers who HIV positive were discouraged to use mixed feeding

| Why mothers who HIV positive were discouraged to use mixed feeding | n | % |
|---|----------|------------|
| Know | 3 | 50 |
| Do not know | 3 | 50 |
| Total | 6 | 100 |

4.4.20 Were you forced to give mixed feeding

All of the women who chose mixed feeding (n=6/100%) were not forced to do so. They might have not been forced by a person, but they could have been forced by their circumstances.

4.4.21 Decision about mixed feeding

All participants (n=6/100%) who chose mixed feeding decided about mixed feeding after delivery.

Table 4.17: Decision regarding mixed feeding

| Decision regarding mixed feeding | n | % |
|---|----------|------------|
| ANC | 0 | 0 |
| Labour ward | 0 | 0 |
| Soon after delivery | 6 | 10 |
| TOTAL | 6 | 100 |

4.4.22 Knowledge whether the mothers know the disadvantages of mixed feeding in the PMTCT Programme

The data (Table 4.18) showed that 50% (n=3) of the participants said that the disadvantage of mixed feeding is that mixed feeding is not good for the babies because extra food and liquid damage the infant's immature digestive system. The other 50% (n=3) indicated that they did not know the disadvantage of mixed feeding in the PMTCT programme.

Table 4.18: Knowledge whether the mothers know the disadvantages of mixed feeding in the PMTCT Programme

| Knowledge whether the mothers know the disadvantages of mixed feeding in the PMTCT Programme | n | % |
|---|----------|------------|
| Know the disadvantages of mixed feeding in the PMTCT Programme | 3 | 50 |
| Do not know the disadvantages of mixed feeding in the PMTCT Programme | 3 | 50 |
| TOTAL | 6 | 100 |

4.4.23 Do you want to continue to have more babies?

The participants were asked whether they want to continue to have more babies. Forty-seven (n=47/79%) participants said they do not want to have more babies, while eleven (n=11/18%) indicated that they are not sure, and two (n=2/3%) participants indicated that they would continue to have more babies. Women with 1-2 children indicated that they want to have more babies, while women with 3 children and above indicated that they do not want to have more babies.

4.5 SUMMARY OF FINDINGS

The researcher synthesised all the relevant data with the following three tables (Table 4.19, Table 4.20 and Table 4.21) and a pie chart representing the distributions of the feeding practices chosen by the mothers who are HIV-positive.

Table 4.19: Assessment of general knowledge level regarding HIV/AIDS

| Research question | Item on questionnaire | Frequency of Responses | | Comments |
|---------------------------------------|-----------------------|------------------------|-----------------|---|
| | | Shows awareness | Lacks awareness | |
| 1 | 1 | 60 | 0 | 100% of mothers who are HIV positive are aware about HIV/AIDS and how HIV can be transmitted. |
| | 2 | 60 | 0 | |
| | 3 | 60 | 0 | |
| Mean frequency | | 60 | 0 | |
| Overall percentage level of awareness | | 100% | 0% | |

Table 4.20: Assessment of awareness and knowledge about the PMCT Programme

| Research question | Item on questionnaire | Frequency of Responses | | Comments |
|----------------------------|-----------------------|------------------------|-----------------|--|
| | | Shows awareness | Lacks awareness | |
| 2 | 4 | 50 | 10 | 87.5% of mothers who are HIV positive are aware of the PMCT Programme |
| | 5 | 50 | 10 | |
| | 6 | 50 | 10 | |
| | 7 | 60 | 0 | |
| Mean frequency | | 52.5 | 7.5 | |
| Overall level of awareness | | 87.5% | 12.5% | |

Table 4.21: Assessment of general knowledge level about the best infants feeding practices for prevention of mother-to-child transmission

| Feeding practice | n | % | Comments |
|--------------------------|-----------|------------|--|
| Exclusive breast feeding | 42 | 70% | This feeding practice is the most recommended |
| Replacement feeding | 12 | 20% | This feeding practice is acceptable but requires sound financial resources and hygiene. |
| Mixed feeding | 6 | 10% | This practice is not recommended. Mothers who practice this method said it was because they did not have enough breast milk. |

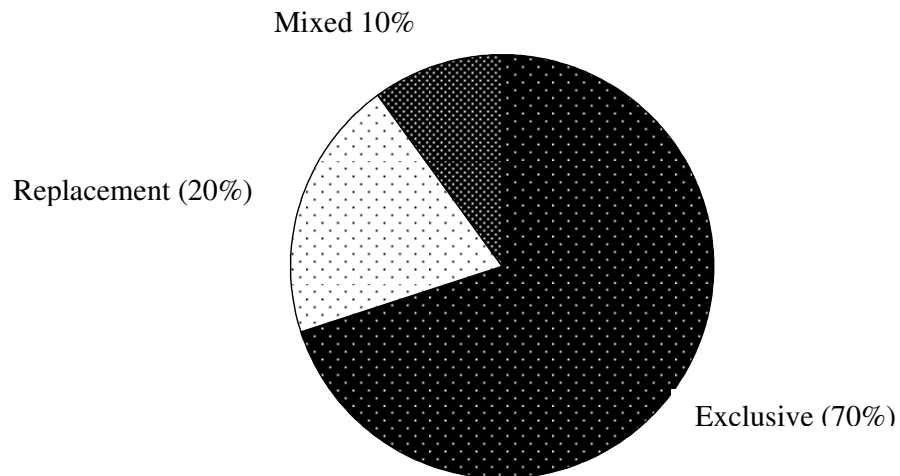


Figure 4.1: A pie chart showing the frequency of feeding practices

4.6 SUMMARY

In this chapter information obtain from the questionnaires has been presented statistically and interpreted and compared with the content of the study. Recommendations and conclusions will be made accordingly in the next chapter.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The study entitled "Infant Feeding Practices in Onandjokwe District Hospital, Namibia in the Prevention of Mother to Child Transmission" and was undertaken to investigate the infant feeding practices of the mothers who are HIV positive. The study found that the participants knew the advantages and disadvantages of each infant feeding method chosen.

The research objectives are to determine the:

- knowledge and practices of mothers who are HIV-positive with regard to infant feeding,
- knowledge of mothers who are HIV-positive regarding HIV/AIDS and the Prevention of Mother-to-Child Transmission (PMTCT) Programme.

5.2 CONCLUSIONS

The following conclusions were made based on the data collected during this study:

5.2.1 Knowledge and practices of mothers who are HIV-positive with regard to infant feeding

The study found that 70% (n=42) of the participants used breast feeding exclusively, 20% (n=12) used replacement feeding and 10% (n=6) used mixed feeding practices.

The study also found that 95% (n=57) of the participants knew the advantages and disadvantages of each method chosen. However, the preparation of replacement feeding was not demonstrated to the women (n=12/100%) that chose replacement feeding.

Furthermore, 17% (n=2) of the women who chose replacement feeding indicated that they could not afford it. Formula feeding was associated with a higher risk of infant mortality than breast feeding in rural population groups. A study done in Rakai, Uganda suggests that formula feeding should be discouraged in rural settings (Kagaayi *et al.*, 2008: 5).

5.2.2 Knowledge of mothers who are HIV-positive regarding HIV/AIDS and the Prevention of Mother-to-Child Transmission (PMTCT) Programme

The study found that all participants (n=60/100%) had good knowledge about HIV/AIDS and were offered HIV-counselling and testing during antenatal care.

Counselling and testing is therefore an entry point into PMTCT programmes. The health workers at health facilities were identified as the biggest source of information regarding the PMTCT programme.

It was concluded that pregnant women and mothers known to be HIV- infected should be informed of the infant feeding practice to improve HIV-free survival of HIV-exposed infants. It has been emphasised that the correct choice of infant feeding is one of the methods in which transmission of HIV from mother to child can be successfully prevented. Success in this regard depends on various factors, such as knowledge and practices of mothers who are HIV-positive regarding infant feeding, availability of replacement feeding and policies of a country (UNICEF, 2000: 3).

5.3 RECOMMENDATIONS

Based on the research data, analyses and discussions, the following recommendations are made:

5.3.1 Informing mothers who are HIV-positive to choose the best method to feed their infants

Pregnant women and mothers known to be HIV-infected should be informed of infant feeding options. This includes information about the risks and benefits of various infant feeding options based on local assessments and guidance in selecting the most suitable option for their own situation. The importance of informing the mother to choose the best method to feed their infants can have an impact on the outcome for the infant's result whether they are HIV-infected or HIV-free.

All health professionals who counsel the mothers who are HIV-positive on infant feeding should be trained, deployed, supervised and supported. Such support should include updated training as new information and recommendations emerge (MOHSS, 2004: 66).

Mixed feeding is not recommended as this practice is associated with higher risk of particular malnutrition and serious illnesses such as pneumonia, diarrhoea and death from causes other than HIV. In addition, mixed feeding may introduce harmful germs, and may reduce gut acidity making it easier for infection to take hold (HIV and breastfeeding, 2009: 10).

The World Health Organisation recommends that mothers known to be HIV-infected should be provided with lifelong antiretroviral therapy or antiretroviral prophylaxis interventions to reduce HIV transmission through breast feeding.

Mothers known to be HIV-infected should only give commercial infant formula milk as a replacement feed to their infants who are not HIV-infected or infants who are of unknown HIV status, when specific conditions are met:

- i) Safe water and sanitation are assured at the household level and in the community;
- ii) The mother or other caregiver can reliably provide sufficient infant formula milk to support normal growth and development of the infant and
- iii) The mother or caregiver can prepare it cleanly and frequently enough so that it is safe and carries a low risk of diarrhoea and malnutrition (WHO, 2010: 16).

These descriptions are intended to give simpler and more explicit meaning to the concepts represented by AFASS (acceptable, feasible, affordable, sustainable and safe) (WHO, 2010: 16).

5.3.2 Storage and preparation of replacement feeding

Storage and preparation of replacement feeding as well as the preparation should be discussed during antenatal care. Formula feeding is a realistic and safe alternative to breast feeding if the mother/family has access to clean water, can afford formula feeding, is able to prepare feeds hygienically and have disclosed her HIV status within their immediate family. If these conditions are not present, replacement feeding may not be a wise option (HIV and breastfeeding 2009: 11). It is important that the preparation method of replacement feeding is discussed with the mothers throughout antenatal care. Replacement feeds must be prepared carefully to avoid germs. Replacement feeding carries an increased risk for the child morbidity and mortality

associated with malnutrition and infectious diseases other than HIV if not prepared well (WHO, 2010: 24).

5.3.3 Alignment of guidelines

The literature showed that there is a gap between Namibia and WHO regarding the length of time for exclusive breast feeding in the context of HIV infection [4 versus 6 months]. The result of this study also showed that participants were given different information regarding the length of time for exclusive breast feeding. It is important to align guidelines and making sure all health workers communicate the same message.

5.4 LIMITATIONS AND FURTHER RESEARCH

The results of this study are contextual and cannot be generalised to other regions.

Therefore, there is a need to conduct similar studies in other regions regarding infant feeding practices in the PMTCT programme and the factors that can influence the infant feeding choices of the mothers.

5.5 SUMMARY

In this chapter conclusions and recommendations have been made in order to solve the problems. Recommendations identified in the research are based on the primary level of prevention of mother-to-child transmission of HIV through breast feeding. Whether replacement infant feeding is practical and accessible to those mothers who are HIV-positive and live in poor socio-economic situations is given to debate. The question of whether these mothers had a choice regarding infant feeding needs to be investigated further. Free infant formula was not provided to these mothers. It seems that these mothers breast-fed out of necessity rather than choice. The research findings should be made known to the institution to enable them to start remedial action.

REFERENCES

- Abdulla, M.F., Young, T., Bitalo, L., Coetzee, N. & Meyers, J.E. 2001. Public health lessons from a pilot programme to reduce mother-to-child transmission of HIV-1 in Khayelitsha. *South Africa Medical Journal* 91 7 (2001) .p529.
- Aika, A.A., Chew, L., Chipepo, K., Ganapati, B. & James, B. 2002. Infant feeding practices of mothers of known HIV status in Lusaka, Zambia.
- Babbie, E. & Mouton, J. 2001. *The Practice of Social Research*. South Africa: Oxford Press.
- Bowling, A. 2002. *Research method in health*. 2nd edition. Buckingham: Open University Press.
- Brink, H.I. 2006. *Fundamentals of research methodology for health professionals*. 2nd edition. Cape Town: Juta & Co, Ltd.
- Breast feeding and HIV. 2006. [Online] Available: <http://www.avert.org/women.htm>
Accessed: 13 April 2009.
- Burns, N. & Grove, S.K. 2001. *The practice of Nursing Research: Conduct, Critique and Utilization*. 4th edition. London: Saunders Company.
- Chikwampu, D., Bond, V., Muvalle, A., Mitimangi, P., Habimanda, V. & Ayles, H. 2001. *Stigma, denial and depression in household counselling*. Presentation at ZAMBART Dissemination Seminar, August.
- Coutsoudis, A., Pillay, K., Spooner, E., Kuhn, L. & Coovadia, H. 2001. Method of feeding and transmission of HIV-1 from mother to children by 15 months of age. *Transaction of the Royal Society of Tropical Medicine and Hygiene*. [97]: 379-87.
- Chopra, M. & Rollins, N. 2007. Infant feeding in the time of HIV: rapid assessment of infant feeding policy and programmes in four African countries scaling up prevention of mother to child transmission programmes. *BMJ*, **320**:1656-1660.
- De Cock, K., Fowler, M.G., Mercier, E. 2000. Prevention of mother to child HIV transmission in resource- poor-countries. *JAMA*, **283**:1175-1185.

- De Vos, A.S. 2000. *Research at grass roots: A primer for the caring professions*. 2nd edition. Pretoria: Van Schaik Publishers.
- Farley, T. & Kesho Bora Study Group. 2006. *Antiretroviral prophylaxis treatment and infants feeding modality among HIV infected women in Sub-Sahara: the Kesho Bora Study*. Paper delivered at the 16th International Conference on AIDS, Toronto, Canada. August 13-18, 2006.
- Filteau, S. 2004. Infant-feeding strategies to prevent post-natal HIV transmission. *Lancet*, **356**:103-112.
- Ferris, M.G. 2006. Prevention of Mother to Child Transmission of HIV: Current Progress and Future Challenges. *HIV Nursing Curriculum*, 177-181.
- Fewtrell, M.S. 2004. The long term benefits of having been breast-fed. *Current Paediatrics*, **14**:97-103.
- Fleshman, M. 2004. Women: the face of AIDS in Africa. *Africa Renewal*, **18**(3), October, 6.
- Gaomab, H.M., Keulder, J. & Sherbourne, R.C.D. 2003. *About Namibia*. Institute for Public Policy and Research. Windhoek: Namibia.
- George, J.B. 1999. *Nursing Theories*. 4th edition. London: Prentice Hall International.
- Global Breast feeding and HIV. 2009. [Online] Available: <http://www.global-breastfeeding.org/category/hiv-and-infantfeeding-HIV/72k> . Accessed: 03/05/2009.
- Gotot, K., Chew, F., Torun, B., Peerson, J.M. & Brown, K.H. 1999. Epidemiology of altered intestinal permeability to lactulose and mannitol in Guatemalan infants. *Journal of Pediatrics, Gastroenterology & Nutrition*, **28**:282-290.
- Granger, G. & Chulay, M. 1999. *Research Strategies for Clinicians*. USA: Library of Congress.
- Guay, L.A. & Ruff, A.J. 2001. HIV and infant feeding an ongoing challenge. *JAMA*, **286**, 2462-2464.
- HIV and Infant Feeding. 2009. [Online] Available: <http://www.avert.org/hiv-breastfeeding.htm>. Accessed: 13/04/2009.

- Iiping, E. & LeBeau, D. 2001. *Beyond Inequality Woman in Namibia*. Windhoek/Harare: University of Namibia and the South African Research and Documentation Centre SAARDC.
- Kagaayi, J., Gray, R., Brahmbhatt, H., Kigozi, G., Nalugoda, F., Wambwire-Mangen, F., Serwadda, D., Sewankambo, N., Ddungu, V., Ssebagala, D., Sekasanvu, J., Kigozi, G., Makumbi, F., Kiwanaku, N., Lutalo, T., Reynolds, S.J & Wawer, M.J. 2008. Survival of Infants Born to HIV- Positive mothers, by feeding Modality, in Rukai, Uganda. *JAIDS*, **39**(10):124.
- Langen, T. 2005. Gender power imbalance on woman capacity to negotiate self-protection against HIV and AIDS in Botswana and South Africa. *African Health Sciences*. **5**(3) September, 188-197.
- Leshabari, S.C., Blystand, A. & Moland, K.M. 2007. Difficult choices: Infant feeding experience of HIV-positive mothers in northern Tanzania. *Journal of Social Aspects of HIV/AIDS*. **(4)** 544-545.
- Limpongsanurak, S. 2006. Efficacy and safety of caesarean delivery for prevention of mother to child transmission of HIV-1: RH commentary. Geneva: The WHO Reproductive Health Library.
- MOHSS. 2001. *National Guidelines for counselling of HIV and AIDS and Sexual Transmitted Diseases*. Windhoek: MOHSS.
- MOHSS. 2001. *National AIDS Co-ordination Programmes*. Windhoek: MOHSS.
- MOHSS. 2002. *A Guide for the Introduction of Adolescent Friendly Health Services in Public Facilities in Six Pilot District in Namibia*. Windhoek: MOHSS.
- MOHSS. 2003. *National Policy on Infant and Young Child Feeding*. Windhoek: MOHSS.
- MOHSS .2004(a). *Guidelines for the Prevention of Mother To Child Transmission of HIV*. Windhoek: MOHSS.
- MOHSS. 2004(b). *Report of the National HIV Sentinel Survey*. Windhoek: MOHSS.

- MOHSS. 2006. *Demographic and Health Survey*. Windhoek: MOHSS.
- MOHSS. 2006. *PMTCT Programmes Onandjokwe District Hospital: Annual Report*.
- MOHSS. 2006. *Report of the HIV Sentinel Survey by the Ministry of Health*. Windhoek: MOHSS.
- MOHSS. 2010. *National Guidelines for Antiretroviral Therapy*. Namibia: MOHSS
- MOHSS. 2010. Report of the HIV Sentinel Survey by the Ministry of Health. Windhoek: MOHSS.
- Nicoll, A., Killewo, J.Z.J. & Mgone, C. 1996. HIV and infant feeding practices: Epidemiological implications from sub-Saharan African countries. *AIDS*, **4**:661-665.
- Nishi, S., Sasi, J., Erande, A.S., Sastry, J., Pisal, H., Kapila, E.B., Shrotri, H., Bulhk, P.M., Phadke, M.A., Bollinger, R.C. & Shankar, A.V. 2003. Prevention of Mother-To-Child Transmission of HIV in Africa. Analysis and Research in Africa Project. *American Society for Nutritional Sciences Journal*. **133**, May, 1326-1331.
- Nzimande, P.N. 2003. *Communicable Disease in the African Continent*. 2nd edition. Natal: Albert Publishers.
- Onandjokwe District Hospital. 2005. *PMTCT Annual Report*.
- Polit, D.F., Beck, C.T. & Hungler, B.P. 2001. *Essentials of Nursing Research Methods: Appraisal utilization*. 5th edition. New York: Lippincott.
- Polit, D.F. & Hungler, B.P. 1999. *Nursing Research Principle and methods*. 6th edition. Philadelphia: Lippincott.
- Preble, E.A. & Piwoz, E.G. 2001. *Prevention of mother to child transmission in Africa: Support for Analysis and Research in Africa Project*. Washington, DC; Academy for Educational Development.
- Rossouw, D. 2003. *Intellectual Tool: Skills for Human Sciences*. 2nd edition. Pretoria: Van Schaik.
- Smith, M.M., Kuhn, L. & Gertrude, H. 2000. Exclusively breast feeding: does it have the potential to reduce breast feeding transmission of HIV? *Nutrition Review*. **58**:333-340.

- Talawat, S., Dore, G. J., Le Coeur, S. & , Lallemand, M. 2002. Infant feeding practices and attitudes among woman with HIV Infection. Northern Thailand. *AIDS Care*, (4):625-631.
- Tijou, T.A., Querre, M.L., Brou, H., Leroy, V., Desclaux, A. & The DITRAME study group. 2009. Couples, PMTCT programs and infant feeding decision-making in Ivory Coast. *ANRS 1201-1202-1253-1271*. [Online] Available: <http://www.hal.inserm.fr/docs/00/39/93/95/DOC/SSM-2009>. Accessed: 18/08/2011.
- United Nations. 2009. *The face of AIDS in Africa*. [Online]. Available: http://un.org/ecosovocdev/geninfo/afrec/vol118no3/183women_aids.htm Accessed: 03/05/2009.
- UNAIDS. 2010. *Report on the global HIV/AIDS epidemic*. [Online]. Accessed: www.unaids.org/documents/20101123_GlobalReport_em.pdf. Accessed: 18/08/2011.
- UNAIDS. 2004. *National HIV/AIDS and Clinical Management Programmes*. [Online]. Available: www.unaids.org.np/publication/200601110333.pdf. Accessed: 13/04/2009.
- UNAIDS.2007.Counselling and voluntary HIV testing for pregnant women in high HIV prevalence countries: Guidance for service providers. Geneva. May.
- UNAIDS. 2004. *National HIV/AIDS Programmes*. UNAIDS/00.17E.June.
- UNAIDS, UNICEF & WHO. 2003. *HIV and Infant Feeding Guidelines for decision-makers*.2003.Report no.: UNICEF /PD/NUT (J) 98.
- UNICEF. 2000. *Report on HIV and infant feeding*. [Online]. Accessed:18/08/2010.
- WHO. 2010. *Guidelines on HIV and infant feeding* [Online]. Available: www.waba.org.my/pdf/WHOHIVguidelines2010.pdf .Accessed: 21/08/2011.
- WHO.2009. *Infant and young child feeding*. Model Chapter for textbooks for medical students and allied health professionals. Geneva. May.
- WHO. 2007. *HIV Transmission Through Breastfeeding*. Geneva. February.
- WHO. 2006. *The world health report working together for health*. Geneva. October.
- WHO/UNAIDS. 2000. *Epidemiology fact sheets on HIV/AIDS*. Geneva. March 24.

WHO/UNAIDS/UNICEF/UNFPA. 2007. *HIV Transmission through Breast feeding*. Geneva. July.

WHO/UNICEF/UNAIDS. 2003. *HIV and Infant Feeding. A guide for health-care managers and supervisors*. Geneva. World Health Organization.

WHO & UNICEF. 2007. *Guidance on the Prevention of Mother to Child Transmission of HIV: towards universal access for women, infants and young children and eliminating of HIV*. Geneva: World Health Organization.

ANNEXURES

ANNEXURE A: APPLICATION FOR PERMISSIONS TO CONDUCT RESEARCH – MINISTRY OF HEALTH AND SOCIAL SERVICES

P.O BOX 2045

Ondangwa

9000

14 April, 2005

The Permanent Secretary
Ministry Of Health and Social Services
Harvey Street
The Research Committee
Private Bag 13198
Windhoek
Namibia

Dear Sir

Re: Application to grant permission to do research in Onandjokwe Health District.

I am O.T.O Ikeakanam a senior registered nurse in Onandjokwe hospital. I am busy doing my Master Degree in Nursing Science with Stellenbosch University. My research study is

Infant Feeding Practices in the Prevention of Mother to Child Transmission in Onandjokwe District Hospital, Namibia.

I intend to interview the mothers who are HIV positive, enrolled in PMTCT program and who come for postnatal follow- up six weeks post delivery. The main reason is to use the information gathered from the study to assist mothers who are HIV positive to find a best way to feed their babies as effectively, safe, affordable, feasible, acceptable and sustainable possible in their circumstance.

I hope my application will be highly considered.

I thank you in advance.

Yours truly,
Mrs. O.T.O Ikeakanam

**ANNEXURE B: APPLICATION FOR PERMISSION TO CONDUCT
RESEARCH – LUTHERAN MEDICAL SERVICES**

P.O BOX 2045
Ondangwa
9000
14 April 2005

Lutheran Medical Service
Onandjokwe District Hospital
Private Bag 2016
Ondangwa
Namibia

Dear Sir

Re: Application to grant permission to do research in Onandjokwe District Hospital

I am O.T.O Ikeakanam a senior registered nurse in Onandjokwe hospital. I am busy doing my Master Degree in Nursing Science with Stellenbosch University. My research study is **Infant Feeding Practices in the Prevention of Mother to Child Transmission in Onandjokwe District Hospital, Namibia.**

I intend to interview the mothers who are HIV positive, enrolled in PMTCT program and who come for postnatal follow- up six weeks post delivery. The main reason is to use the information gathered from the study to assist mothers who are HIV positive to find a best way to feed their babies as effectively, safe, affordable, feasible, acceptable and sustainable possible in their circumstance.

I hope my application will be highly considered.

I thank you in advance.

Yours truly,

Mrs. O.T.O Ikeakanam

**ANNEXURE C: LETTER OF PERMISSION TO CONDUCT RESEARCH –
MINISTRY OF HEALTH AND SOCIAL SERVICES**



REPUBLIC OF NAMIBIA

Ministry of Health and Social Services

Private Bag 13198
Windhoek
Namibia

Ministerial Building
Harvey Street
Windhoek

Enquiries: Mr. A. Kulobone

Ref.: 17/1/6

Tel: (061) 2032507

Fax: (061) 227607

E-mail: akulobone@mhss.gov.na

Date: 24 April 2006

OFFICE OF THE PERMANENT SECRETARY

Ms. O.T.O Ikeakanam
PO Box 2045
Ondangwa
Namibia

**Re: Evaluation of Infant Feeding practices in Onandjokwe Health District: Oshikoto Region,
Northern Namibia, in the Prevention of Mother to Child Transmission of HIV/AIDS.**

1. Reference is made to your application to conduct the above-mentioned study.
2. The proposal has been evaluated and found to have merit.
3. Kindly be informed that approval has been granted under the following conditions:
 - 3.1 A quarterly progress report is to be submitted to the Ministry's Research Unit;
 - 3.2 Preliminary findings are to be submitted to the Ministry before the final report;
 - 3.3 Final report to be submitted upon completion of the study;
 - 3.4 Separate permission to be sought from the Ministry for the publication of the findings.

Wishing you success with your project.

Yours sincerely,

DR. K. SHANGULA
PERMANENT SECRETARY



Directorate: Policy, Planning and HRD
Subdivision: Management Information and Research

Forward with Health for all Namibians by the Year 2000 and Beyond!

**ANNEXURE D: LETTER OF PERMISSION TO CONDUCT RESEARCH –
LUTHERAN MEDICAL SERVICES**

LUTHERAN MEDICAL SERVICE

ONANDJOKWE HOSPITAL
PRIVATE BAG 2016
ONDANGWA
NAMIBIA

PRACTICE NO: 057 000 0012572
E-mail: lms@africa.com.na

TELEPHONE 065-240111/248111/2/3/4/5/6/7
FAX 065 - 240688

17.05.2005

Mrs O.T. O Ikeakanam
P.O. Box 2045
ONDANGWA

Dear Mrs Ikeakanam

RE: PERMISSION TO DO RESEARCH

1. Permission is hereby granted for you to proceed with your research in the institution.
2. Please ensure that the office of the Permanent Secretary in the ministry is also fully informed.

Yours sincerely


**Prof F. Amaambo
SUPERINTENDENT**

**LUTHERAN MEDICAL
SERVICES**

2005 -05- 17

Tel. 065-240111 - Fax 065-240688
Private Bag 2016 ONDANGWA
NAMIBIA

ANNEXURE E: PARTICIPANTS INFORMATION SHEET

I am O.T.O.Ikeakanam, a Master in Nursing Science (M CUR) student at the University of Stellenbosch, South Africa. As part of the course requirement, I'm conducting a research on the above mention topic. The purpose of the study is to assess the infant feeding in the prevention of mother to child transmission of HIV in Onandjokwe District Hospital. If at any time before, during or shortly after the interview you decide to withdraw your consent, know that it is possible and that it shall not be held against you in any way.

However, if you voluntarily decide to participate your anonymity will be protected. The response shall remain with me alone. The method of analysis and reporting shall be such that it will be possible to identify any respondent from reading the report. Your privacy shall be guaranteed. If you have any questions, do feel free to ask me. I shall answer any question may have to the best of my ability.

Signature of client

Witness

ANNEXURE F: RESEARCH QUESTIONNAIRE**SECTION A: PERSONAL DETAILS AND DEMOGRAPHIC DATA**

1. Age ☐
2. Gravid ☐
3. Para ☐
4. Marital status: Single ☐ Married ☐
Divorced ☐
Widowed ☐ Separated ☐
5. Are you currently employed? Yes ☐ No ☐
If you are employed is it Temporary ☐ Permanent ☐
If temporary how many hours per: Week ☐ Month ☐
6. Highest level of education achieved
Never attend school ☐
Grade 1-7 ☐
Grade 8-12 ☐
Diploma/Degree ☐ Other, Please specify _____
7. Housing
Types of housing: Single quarter ☐ Flat ☐
Informal settlement ☐
Formal housing ☐ Village ☐
Other Please specify _____
8. How far is the health facility from your home?
Less than 10 km ☐ 10-49 km ☐ 50-100 km ☐ More than 100km ☐

SECTION B: KNOWLEDGE ON HIV/AIDS AND PMTCT PROGRAMS.

Define the following terms:

1. What is HIV?

2. HIV can be transmitted through:

3. What is AIDS?

4. What is PMTCT programs?

5. Have you ever heard about PMTCT program?

Yes ☐ No ☐

If yes, from where? Media ☐ Church ☐ Health facility

☐

Private Doctor ☐ Other Please specify _____

6. Usefulness of the PMTCT program

Useful ☐ Not Useful ☐ Don't know ☐

7. When did you find out that you are HIV positive?

Before pregnancy ☐

During pregnancy ☐

During labour ☐

SECTION C: INFANT FEEDING PRACTICES

1. How do you feed your baby now?

1.1 Exclusive breast feeding ☐

1.2 Replacement feeding ☐

1.3 Mixed feeding ☐

3.1 Do you think that breast feeding add an additional chance (risk) of HIV transmission to the baby?

Yes ☐ No ☐

3.2 Do you think that all the mothers who are HIV positive should breast-feed their babies?

Yes ☐ No ☐

If yes why?

If no, why?

4. What is exclusive breast feeding?

Tick the correct answers by marking with X

- 1) Infant receives no other food or drink, not even water, other than breast milk ☐
- 2) Feeding the infant using infant formula modified cow's milk or goat Milk ☐
- 3) Breast feeding with the addition of fluids, solid foods and /or non-human milk such as formula ☐

5. When did you decide about exclusive breast feeding?

ANC ☐ Labour Ward ☐

Soon after delivery ☐

6. Who is involved in this decision?

Partner ☐ Spouse ☐ Mother in law ☐

Sister ☐ Father ☐ Mother ☐

Grandmother ☐

Other specify_____

7. For how long do you expect to breast-feed your baby?

1-2 months ☐

3-4 months ☐

5-6 months ☐

8. Were you told not to breast-feed at all?

Yes ☐ No ☐

If yes, by whom? Partner ☐ Spouse ☐ Mother in law

☐ Sister ☐ Father ☐ Mother ☐ Grandmother

☐

Other specify_____

9. Were you forced to breast-feed?

Yes ☐ No ☐

If yes, by whom Partner ☐ Spouse ☐ Mother in law ☐

Sister ☐ Father ☐ Mother ☐ Grandmother ☐

Other specify_____

10. In the PMTCT program what are the advantages and disadvantages of exclusive breast-feeding?

10.1

Advantages_____

10.2

Disadvantages_____

11. When do you expect to give your baby other foods or liquids?

3 months ☐

4 months ☐

6 months ☐

12. If replacement feeding is the choice

What is replacement feeding?

Tick the correct answers by marking with X

- 1) Infant receives no other food or drink, not even water, other than breast milk ☐
- 2) Feeding a child who is not receiving any breast milk with a diet that provides all the nutrients the needs until the child is fully fed on family food ☐
- 3) Using both breast milk and infant formula ☐

13. When did you decide about replacement feeding?

ANC ☐ Labor Ward ☐ Soon after delivery ☐

14. Who is involved in this decision?

Partner ☐ Spouse ☐ Mother in law ☐

Sister ☐ Father ☐ Mother ☐

Grandmother ☐

Other specify_____

15. Can you afford to buy replacement feeding?

Yes ☐ No ☐

16. Was replacement feeding preparation and storage demonstrated to you?

Yes ☐

No ☐

If yes, by whom? Partner ☐ Spouse ☐ Mother in law ☐

Sister ☐ Father ☐ Mother ☐

Grandmother ☐

Other specify_____

17. In PMTCT programs what are the advantages and disadvantages of replacement feeding?

17.1 Advantages:

17.2

Disadvantages:_____

18. What is mixed feeding?

Tick the correct answers by marking with X

1) Infant receives no other food or drink, not even water, other than breast milk ☐

2) Feeding a child who is not receiving any breast milk with a diet that provides all the nutrients the needs until the child is fully fed on family food ☐

3) Using both breast milk and infant formula ☐

19. Do you know why HIV positive mothers are discouraged from mixed feeding?

Yes ☐

No ☐

If yes why _____

20. Were you forced to give your baby mixed feeding?

Yes ☐

No ☐

If yes by whom?

Partner ☐

Spouse ☐

Mother in law ☐

Sister ☐

Father ☐

Mother ☐

Grandmother ☐

Other specify _____

21. When did you decide about mixed feeding?

ANC ☐

Labour Ward ☐

.Soon after delivery ☐

22. Knowledge whether the mothers know the disadvantages of mixed feeding in PMTCT programmers.

- 1) This practices increase the risk of HIV transmission ☐
- 2) Mixed feeding is not recommended at all ☐
- 3) This practices do not increase the risk of HIV transmissions ☐

23. Do you want to continue to have more babies?

Yes ☐

No ☐

Not Sure ☐